

REMOVAL ACTION REPORT
FOR
GOODRICH ASBESTOS
1000 GOODRICH BOULEVARD
MIAMI, OTTAWA COUNTY, OKLAHOMA



Prepared for

U.S. Environmental Protection Agency Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102

Contract No. EP-S5-17-02
Technical Direction Document No. 0001/19-190
WESTON Work Order No. 20600.012.001.1190
NRC No. N/A
SEMS ID OKN000605314
FPN N/A
SSID A6MK
EPA OSC Mike McAteer

Prepared by



Weston Solutions, Inc.
2600 Parkway, Suite 280
Frisco, Texas 75034

May 2020

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) Region 6 tasked Weston Solutions, Inc. (WESTON®), the EPA Region 6 Superfund Technical Assessment and Response Team (START) contractor, to provide technical assistance and documentation of Emergency Removal Action (Phase I) and Time-Critical Removal Action (Phase II) field activities conducted at the Goodrich Asbestos site (Site) located in Miami, Ottawa County, Oklahoma.

The Site is a former B.F. Goodrich tire manufacturing plant built in 1944 that encompassed an area of approximately 160 acres. The Site was decommissioned in 1986 and was subsequently sold and subdivided. The majority of the facility's structures were demolished in 2014, leaving debris piles, building foundations, and four remaining structures containing asbestos-containing material (ACM) within the removal action study area boundary, which covered approximately 47 acres of the Site.

In June 2019, EPA began Phase I Emergency Removal Action field activities at the Goodrich site. Phase I removal activities included the excavation and transportation of 19 asbestos-contaminated debris piles, including debris created from the wet demolition of two structurally unsound, asbestos-contaminated buildings (Oven Building and Brick Office Building) to an approved, off-site disposal facility.

In October 2019, EPA began Phase II Time-Critical Removal Action field activities following the Phase I removal actions. Phase II activities included the abatement of friable ACM inside the Powerhouse Building, Autoclave Basement, Utility Pits, and North Storage Tank. The EPA also conducted remediation of hazardous materials identified as oil and grease residue material on four Banbury Mixers, as well as miscellaneous hazardous waste inside the former Manufacturing Warehouse Building. Suspected chat was also sampled and removed from areas scattered around the Site. Chat is a gravel-like waste created from lead and zinc mining activities. In the process of mining and screening fine washed sand, a coarse grained small gravel remains.

The following is a summary of the removal action activities completed by the EPA at the Site:

- A total of 25,362.49 tons of ACM was excavated, transported, and disposed of to an approved landfill:
 - A total of 7,188.46 tons of ACM were transported to the American Environmental Landfill (AEL) in Sand Springs, Oklahoma.
 - A total of 18,174.03 tons of ACM were transported to the Prairie View Landfill in Lamar, Missouri.
- A total of 629 perimeter air samples (including quality control [QC] samples) were collected during debris excavation and loading activities. Air sample results indicated no airborne asbestos fiber concentrations above the EPA action level of 0.01 fibers per cubic centimeter (f/cc).
- Particulate monitoring was conducted using DustTrak II DRX Particulate Monitors during soil excavation and loading activities; exceedances of the Site action level (100 μm) were attributed to off-site vehicular traffic due to the proximity of the monitoring stations to the public roads surrounding the Site.
- Soil was excavated to 6 inches below ground surface (bgs) in an area identified during the overland flow path sampling as containing trace (<0.25%) levels of asbestos. Post-excavation confirmation soil samples were analyzed and all associated results reported asbestos as non-detect.
- Approximately 53 cubic yards (cy^3) of exposed chat was excavated and disposed of at AEL in Sand Springs, Oklahoma. The chat was removed from the road, down to the concrete and the additional excavated areas were then backfilled with rock and secured with concrete walls.
- Additional hazardous materials removed included 53.82 tons of carbon black, four 55-gallon drums of miscellaneous hazardous waste, 2,388 fluorescent lightbulbs, and one roll-off box of hazardous corrosive waste (light ballasts), which were disposed of at various EPA approved disposal facilities depending on the components of the material.
- To confirm that the concrete foundation pad was clear of any residual asbestos at the end of the removal action, confirmation air sampling was conducted on 12 grids scattered over the concrete pad. The grids consisted of 100-foot-by-100-foot areas, randomly selected to verify the removal of ACM from the concrete pad foundation. No asbestos fibers were detected in samples collected from the 12 grids during the confirmation air sampling event.
- Approximately 660 cy^3 of ACM was removed during the abatement of the Powerhouse Building, conducted by an Oklahoma Department of Labor (ODOL) licensed asbestos abatement contractor and disposed of at AEL, Sand Springs, Oklahoma. Post abatement clearance air samples were collected from the Powerhouse Building and indicated no asbestos detected above the Oklahoma Asbestos Control Act (40 O.S. § 450, 380:50-11-2

(d)) clearance level of 0.01 f/cc. Visual inspections conducted by ODOL, verified the completion of the abatement work as required by the Oklahoma Asbestos Control Act.

- A total of 249.32 tons of scrap metal separated from demolition debris was collected and recycled by Briscoe Scrap Recycling in Quapaw, Oklahoma.
- Site restoration activities included backfilling with rock three small, open depressions in the concrete foundations and open troughs and pits where applicable; securing the buildings on-site and the perimeter fencing to deter trespassing; and erecting fencing with warning signage around Utility Pit areas and other large open pits located around the Site.

START prepared this removal action report to describe the technical scope of work completed as part of the Technical Direction Document (TDD) No. 0001/19-190 under Contract No. EP-S5-17-02 for EPA Region 6. The EPA On-Scene Coordinator (OSC) was Mike McAteer.

☐

The EPA Task Monitor did not provide final approval of this report prior to the completion date of the work assignment. Therefore, Weston Solutions, Inc. has submitted this report absent the Task Monitor's approval.

☒

The EPA Task Monitor has provided final approval of this report. Therefore, Weston Solutions, Inc. has submitted this report with the Task Monitor's approval.

TABLE OF CONTENT

Section	Page
EXECUTIVE SUMMARY	ES-1
1 INTRODUCTION.....	1-1
1.1 PROJECT OBJECTIVES	1-1
1.2 SCOPE OF WORK.....	1-2
1.3 REPORT FORMAT.....	1-4
2 SITE BACKGROUND	2-1
2.1 SITE LOCATION AND DESCRIPTION	2-1
2.2 SITE HISTORY	2-2
2.2.1 Site Ownership.....	2-2
2.2.2 Regulatory History.....	2-2
2.3 PREVIOUS INVESTIGATIONS.....	2-3
3 ACTIONS TAKEN	3-1
3.1 COMMUNITY INVOLVEMENT	3-1
3.2 PRELIMINARY FIELD ACTIVITIES AND SITE SETUP.....	3-2
3.3 AIR SAMPLING AND PARTICULATE MONITORING	3-3
3.3.1 Perimeter Asbestos Air Sampling.....	3-3
3.3.2 Perimeter Particulate Monitoring.....	3-5
3.3.3 Telemetry System and Weather Station.....	3-6
3.3.4 Office Air and Dust Sampling	3-7
3.4 PHASE I REMOVAL ACTION.....	3-9
3.4.1 Debris Pile Removal	3-9
3.4.2 Building Demolition	3-10
3.4.3 Evaluation of Remaining On-Site ACM and Hazardous Materials.....	3-11
3.5 PHASE II REMOVAL ACTION	3-13
3.5.1 Powerhouse Building	3-13
3.5.2 Utility Pit Debris Removal.....	3-15
3.5.3 Autoclave Abatement.....	3-16
3.5.4 Miscellaneous ACM Removal	3-17
3.5.5 Removal of Additional Hazardous Materials	3-18
3.6 OVERLAND FLOW PATH SAMPLING	3-22
3.7 RECYCLING.....	3-23
3.8 SITE RESTORATION	3-23
3.9 REMAINING ITEMS ON-SITE	3-24

TABLE OF CONTENT (CONTINUED)

4	SAMPLE ANALYSIS AND DATA VALIDATION.....	4-1
4.1	SAMPLE ANALYSES AND DATA REPORTING.....	4-1
4.2	DATA VALIDATION.....	4-3
5	SUMMARY	5-1
6	REFERENCES.....	6-1

LIST OF APPENDICES*

Appendix A	Quality Assurance Sampling Plan (QASP)
Appendix B	Chain of Title, Ottawa County Appraisal Documents, and Access Agreements
Appendix C	Tribal Jurisdictional Map
Appendix D	Injunction Documentation: ODEQ v. Michelin North America
Appendix E	ODEQ Debris Pile Sample Analysis 2018
Appendix F	Weather Station Data Logs
Appendix G	Particulate Monitoring Data Logs
Appendix H	Pollution Reports (POLREPs)
Appendix I	Site Logbooks
Appendix J	Digital Photographs
Appendix K	Community Meeting Presentation
Appendix L	Phase I and II Factsheets
Appendix M	Summary Data Tables
Appendix N	High Wind Policy
Appendix O	Waste Manifests, Profile, and Disposal Request
Appendix P	Asbestos Abatement Project Design – Utility Pits, Autoclave, and North Storage Tank
Appendix Q	Powerhouse Abatement Project Design
Appendix R	Powerhouse Abatement Air Sampling Results
Appendix S	Powerhouse Abatement Waste Manifest's and ODOL Inspection Paperwork
Appendix T	Concrete Pad Clearance Sampling Protocol
Appendix U	Benzene Monitoring Well Location Map
Appendix V	Analytical Data Packages
Appendix W	Data Validation Reports

***Appendices are provided as separate portable document file (PDF) files.**

LIST OF FIGURES*

Figure 1-1	Site Location Map
Figure 1-2	Site Area Map
Figure 2-1	Site Layout Map
Figure 3-1	Perimeter Air Sampling and Monitoring Location and Results Map
Figure 3-2	Site Removal Map
Figure 3-3	Perimeter Soil Sampling Results Map
Figure 3-4	Chat Sample Results Map
Figure 3-5	Concrete Pad Clearance Sampling Location and Results Map
Figure 3-6	Overland Flow Path Sample Results Map

***Figures are provided as separate PDF files.**

LIST OF ACRONYMS

ACM	asbestos-containing material
ACO	Administrative Compliance Order
AEL	American Environmental Landfill
ASHERA	Asbestos Hazard Emergency Response Act
ASOS	Automated Surface Observing Systems
AST	aboveground storage tank
ASTM	American Society for Testing and Materials International
bgs	below ground surface
BOA	Brick office Building
CARB	California Air Resources Board
cc/min	cubic centimeters per minute
CB	Conex Box
CBT	Carbon Black Tank
CFR	Code of Federal Regulations
cm	centimeter
CSI	Campbell Scientific, Inc.
cy ³	cubic yards
DPA	Debris Pile Area
EMB	Emergency Management Branch
EPA	U.S. Environmental Protection Agency
ERRS	Emergency and Rapid Response Services
f/cc	fibers per cubic centimeter
FR	Fire Riser
GA	Gil Air
GIS	Geographical Information Systems
GPS	Global Positioning System
HASP	Health and Safety Plan
ID	Identification
IDW	investigation-derived waste
l/min	liters per minute

LIST OF ACRONYMS (CONTINUED)

MCE	mixed cellulose ester
MFL	million fibers per liter
mg/kg	Milligrams per kilogram
MHz	megahertz
mm	millimeter
mph	miles per hour
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAAQS	National Ambient Air Quality Standard
ND	not detected
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation
NST	North Storage Tank
OAC	Oklahoma Administrative Code
OB	Oven Building
ODEQ	Oklahoma Department of Environmental Quality
ODOL	Oklahoma Department of Labor
OSC	On-Scene Coordinator
PACM	presumed asbestos-containing material
PCB	polychlorinated biphenyl
PCM	Phase Contrast Microscopy
PDF	Portable Document File
PHB	Powerhouse Building
PLM	Polarized Light Microscopy
PTL	Project Team Leader
QA	Quality Assurance
QASP	Quality Assurance Sampling Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act

LIST OF ACRONYMS (CONTINUED)

RRF	relative response factor
RSL	Regional Screening Level
s/cc	cubic centimeter
s/cm ²	per centimeters squared
SCRIBE	Environmental Sampling Data Management System
SEMS	Superfund Enterprise Management System
START	Superfund Technical Assessment and Response Team
SVOCs	semivolatile organic compounds
TAL	Target Analyte
TAT	turnaround time
TCLP	Toxicity Characteristics Leaching Procedure
TDD	Technical Direction Document
TEM	Transmission Electron Microscopy
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substance Control Act
TSI	Thermal Systems Insulation
TWA	time-weighted average
UP	Utility Pit
VOCs	volatile organic compounds
WESTON	Weston Solutions, Inc.
WGS-84	World Geodetic System – 1984
WB	Warehouse Building
µg/m ³	micrograms per cubic meter
µm	microns

1 INTRODUCTION

Weston Solutions, Inc. (WESTON®), the U.S. Environmental Protection Agency (EPA) Region 6 Superfund Technical Assessment and Response Team (START) contractor, was tasked by the EPA Region 6 under Contract Number EP-S5-17-02, and Technical Direction Document (TDD) Number 0001/19-190, to provide technical assistance and documentation during the Emergency Removal (Phase I) and Time-Critical Removal Action (Phase II) activities at the Goodrich Asbestos site (Site) located at 1000 Goodrich Boulevard, Miami, Ottawa County, Oklahoma. A Site Location Map and Site Area Map are provided as Figures 1-1 and 1-2, respectively. The Superfund Enterprise Management System (SEMS) Identification (ID) for the Site is OKN000605314.

START worked concurrently with EPA Emergency and Rapid Response Services (ERRS), Environmental Restoration LLC (ER), contractors who were responsible for excavation, transportation, and off-site disposal of the asbestos-containing material (ACM) and other hazardous material.

This removal action report has been prepared to describe the technical scope of work completed during Phase I and Phase II removal action activities under TDD No. 0001/19-190.

1.1 PROJECT OBJECTIVES

The primary objective of this removal action was to eliminate the threat to public health, welfare, and the environment, as related to criteria set forth in *40 Code of Federal Regulations (CFR) §300.415(b)*, posed by the site-related contamination of ACM present at the Site.

This removal action was initiated following the EPA emergency removal assessment requested by the Oklahoma Department of Environmental Quality (ODEQ), which was conducted in November 2018 (EPA, 2019). The analytical results from samples of the demolition debris piles collected during the removal assessment detected chrysotile asbestos ranging in concentrations from trace (< 1.0%) to 40% total asbestos. Chrysotile was also detected in samples collected from the buildings on-site: 80% in the Powerhouse Building, up to 70% in the Oven Building, and up to 60% in the Brick Office Building. Removal of the ACM on-site was required due to exceedances

above the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) action level of greater than 1% asbestos. A detailed report describing the removal assessment activities, including a summary of analytical results, was submitted to EPA in April 2019 under TDD No. 0001/19-190 (EPA, 2019).

The removal action project objectives were achieved through the removal of asbestos and other miscellaneous hazardous and non-hazardous material and its transportation to an approved disposal facility. Activities included the consolidation of asbestos-laden debris, abatement of friable or damaged asbestos, and the collection and categorization of miscellaneous hazardous and non-hazardous material for off-site disposal. Following the removal of aforementioned materials, Site restoration and securing of existing physical hazards was conducted. Due to the presence of asbestos in multiple structures, abatement of ACM inside the Powerhouse Building and the demolition of the Brick Office and Oven Buildings and removal of the asbestos debris was required. ERRS procured an Oklahoma Department of Labor (ODOL)-licensed asbestos abatement contractor to conduct the abatement of asbestos inside the Powerhouse Building in accordance with the Oklahoma Asbestos Control Act (ODOL, 2016).

START was responsible for air monitoring and sampling during ACM removal activities and for the documentation of engineering control measures used to minimize off-site migration of asbestos fibers. START procured an ODOL-licensed air clearance contractor to collect confirmation samples after ACM abatement activities were completed.

1.2 SCOPE OF WORK

The START scope of work for the Goodrich Asbestos Removal action included conducting perimeter air sampling and particulate monitoring; collecting confirmation air and dust samples; collecting samples of backfill material and other material containing possible hazardous constituents; subcontracting laboratory analyses; conducting data validation and data management; and maintaining Site documentation using Response Manager. START also provided written, digital, and cost documentation of removal action activities.

Additional START removal activities included:

- Support community involvement.
- Develop a site-specific Quality Assurance Sampling Plan (QASP) and a Health and Safety Plan (HASP).
- Conduct perimeter soil sampling to the east and south of the Site to document that no asbestos had migrated off-site.
- Conduct monthly confirmation dust sampling of office trailers and Conex Boxes used on-site for worker safety.
- Procure and conduct oversight of a third-party (ODOL-licensed) air clearance contractor for the duration of the Powerhouse Building abatement activities.
- Collect bulk asbestos samples from Utility Pits, Autoclave Basement, and Powerhouse Boilers to confirm presence of asbestos.
- Estimate the volume of remaining ACM in the Utility Pits and Autoclave Basement to be removed during Phase II.
- Evaluate the volume of additional hazardous material remaining on-site to be removed during Phase II.
- Collect soil samples along the potential off-site overland flow path to investigate potential off-site migration.
- Collect soil samples in areas with suspected chat.
- Conduct post-removal clearance sampling of the concrete pad.
- Prepare a Final Removal Action Report.

The EPA-approved QASP is provided as Appendix A. The site-specific HASP prepared for the project will remain part of the overall project files.

ERRS contractors were responsible for the excavation and removal of identified hazardous materials on-site and their transportation to and disposal at an approved disposal facility, while maintaining the engineering controls in place to minimize off-site migration of ACM. The removal and disposal activities included: consolidation of asbestos-laden debris, excavation of asbestos debris, demolition of two structurally compromised buildings containing ACM, abatement of the Powerhouse Building, abatement of the Autoclave Basement, removal of asbestos debris from the Utility Pits, categorization of miscellaneous hazardous and non-hazardous material, disposal of

affected materials at approved disposal facilities, decontamination of equipment, dust control, Site security maintenance, and Site restoration.

1.3 REPORT FORMAT

This Removal Action Report has been organized as follows:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Actions Taken
- Section 4 – Sample Analysis and Data Validation
- Section 5 – Summary
- Section 6 – References

Figures, tables, and appendices referred to in this document are presented as separate portable document format (PDF) files.

2 SITE BACKGROUND

Information regarding the Site location, description, operational and regulatory history, and summary of previous investigations are included in the following subsections.

2.1 SITE LOCATION AND DESCRIPTION

The Goodrich Site is located at 1000 Goodrich Boulevard, Miami, Ottawa County, Oklahoma. The Site is the location of a former B.F. Goodrich tire plant that encompassed approximately 160-acres, which was subdivided into two parcels. For the purposes of the removal action, the study area was limited to approximately 47 acres consisting of former building foundations and subsurface structures associated with the former plant operations. There were four buildings on-site identified as the Powerhouse Building and basements, former Manufacturing Warehouse Building, Brick Office Building, and Oven Building. The latter two were found to be structurally unsound and were demolished in place as part of the removal action. Additional on-site features included 20 Debris Pile Areas (19 containing ACM), seven Utility Pits: three of which contained addition covered areas, a Carbon Black Tank, four Banbury Mixers, a Conex Box containing asbestos, the North Storage Tank, and the Autoclave Basement, which is located in the northwest corner of the concrete pad. There is also a railroad spur that enters the northeast portion of the site. A Site Layout Map is provided as Figure 2-1.

The geographic coordinates of the Site collected from the southwest corner of the Oven Building are Latitude 36.890183° North and Longitude 94.888354° West. These coordinates were determined by using a handheld Global Positioning System (GPS) based on the World Geodetic System – 1984 (WGS-84) with accuracy estimated at less than a 50-foot circular probable error.

The Site is bordered by H Street NW, schools, and residential developments to the east, Goodrich Boulevard and single-family homes to the south, woodlands and agricultural fields to the west, and woodlands/agricultural fields with ten soccer fields approximately a quarter of a mile from the Site boundary to the north. There are three schools located less than 500 feet from the east boundary of the Site: the Miami Head Start School (pre-kindergarten), Nichols Elementary School,

and Will Rogers Middle School. Residential homes are located between the Site and Will Rogers Middle School.

2.2 SITE HISTORY

The Site was the location of an active B.F. Goodrich tire manufacturing plant. The B.F. Goodrich tire plant operations began in 1944 with construction of the Miami Plant that opened in 1945 and operated 24 hours a day, 7 days a week until discontinuing operations in 1986.

2.2.1 Site Ownership

The property was divided into two parcels that were owned by several different entities since the B.F. Goodrich facility closed. The majority of the removal action was completed on property previously owned by Mr. George R. Blakeney of Real Estate Remediation, LLC, which encompasses approximately 57 acres of the Site. The ownership of this 57-acre portion of the Site transferred to Ottawa County, Oklahoma, on 11 June 2019, due to the previously mentioned owners' delinquency on their property taxes. A small section of the removal (<1-acre) was completed on property that is currently owned by Mr. Alan Kaspar. Details pertaining to site ownership (Chain of Title, Ottawa County Appraisal Documents, and Access Agreements) are provided as Appendix B.

The EPA contacted the Bureau of Indian Affairs office in Miami, Oklahoma, along with a Miami Nation representative, to confirm the Goodrich Asbestos site is not located on Tribal Trust Land. A Tribal Jurisdictional Map illustrating tribal boundaries is provided as Appendix C.

2.2.2 Regulatory History

In 1998, an Injunction Order involving the State of Oklahoma vs. Michelin North America outlined activities to be completed to remedy environmental problems documented by the State of Oklahoma concerning a benzene plume in the groundwater beneath part of the former B.F. Goodrich plant. The plume is still present and monitored by Michelin and ODEQ. Injunction documentation is included as Appendix D. On 11 June 2014, Mr. Blakeney received a demolition permit from ODEQ to demolish a portion of the former B.F. Goodrich tire plant requiring the

regulated removal of all loose or significantly damaged ACM. Approximately 80% of the former structure was subsequently demolished. Demolition oversight was conducted by ODEQ and the City of Miami.

On 21 October 2014, ODEQ Environmental Complaints and Local Services conducted a complaint investigation noting that the solid waste generated from the demolition activities remained on-site. After observing the regulated waste (wallboard, tile, roofing material, and other ACM) had not been removed to a permitted landfill, ODEQ issued a Notice of Violation (NOV) on 03 November 2014. ODEQ notified Mr. Blakeney that he was in violation of 27A O.S. §2-10-301-(A) and Oklahoma Administrative Code (OAC) 252:515-3-1(3) for owning or operating an unpermitted disposal facility and for failing to dispose of regulated solid waste correctly. An Administrative Compliance Order (ACO) was issued to Mr. Blakeney by ODEQ because of the NOV (No. 14-ECLS-NOV-101). On 08 January 2015, ODOL issued a letter stating that Mr. Blakeney breached the asbestos agreement set forth by the State concerning removal of ACM on-site. The demolition of the on-site vacant buildings ceased when Mr. Blakeney filed Chapter 11 bankruptcy in the Northern District Court of Alabama on 10 June 2015.

2.3 PREVIOUS INVESTIGATIONS

This section describes the previous investigations conducted at the Goodrich site by ODEQ and EPA.

In November 2015, ODEQ contacted EPA Region 6 regarding the potential release of asbestos from the partial collapse of a brick wall at the Site. ODEQ reported to EPA that the brick wall toppled onto the roof of an attached building, referred to as the Oven Building, causing the roof to collapse through the second floor of the building and onto the first floor. ACM had previously been identified on the second floor. EPA subsequently tasked START to conduct an assessment of the facility. During the assessment, regulated solid wastes (wallboard, tile, roofing material, and other materials) and non-regulated solid wastes (uncontaminated rock, dirt, concrete, and brick) were observed stockpiled to the west of the Oven Building. Non-friable presumed ACM (PACM) was also observed comingled within the solid waste stockpiles.

During the exterior evaluation of the Oven Building, START observed that the southwest corner of the Oven Building had collapsed into an open bay. Entry was not made into the Oven Building due to health and safety concerns. Exterior observations identified brick and roofing material within the open bay. Potentially friable ACM was not visually identified from the exterior evaluation.

ODEQ returned to the Site on 8 October 2018, to collect a limited number of samples from the piles of demolition debris left on the property. Analytical results of the samples identified elevated levels of asbestos, primarily chrysotile, in many of the debris piles. The former Powerhouse Building located on the north side of the property also contained varying amounts of ACM and had recently been broken into by trespassers. The results of the 2018 ODEQ Debris Pile sampling event are provided as Appendix E.

After the collection of the debris pile samples, ODEQ requested assistance from EPA concerning the potential release of asbestos from the debris piles on-site and for help to secure the facility as trespassers had routinely gained access to the property and vandalized the Powerhouse Building and other structures on-site. EPA assessed options for securing the facility (i.e., fencing and sealing the Powerhouse Building) and collected five perimeter asbestos air samples, all of which were non-detect for asbestos. During this assessment, open doors and windows of the Powerhouse Building were boarded up and holes in the perimeter fence surrounding the Site were repaired.

Based on the 2018 findings, ODEQ requested that EPA conduct a more detailed removal assessment to confirm the presence of asbestos across the entire Site. In November 2018, EPA conducted an emergency removal assessment of the facility (EPA, 2019). START collected bulk asbestos samples from the debris piles, the Powerhouse Building, Oven Building, Brick Office Building, and former Manufacturing Warehouse Building, as well as samples from suspected ACM in the Thermal System Insulation (TSI) on the North Storage Tank, the Fire Riser, and inside the Conex Box. The water in the Utility Pits and the soil-covered area northeast of the concrete pad were also sampled for asbestos.

The results of the assessment indicated that a majority of the bulk asbestos samples collected from the on-site debris piles and structures exceeded the federal regulatory limit of 1% asbestos and

would need to be either abated, removed, or managed in place. It was also determined that asbestos abatement would be necessary in the Powerhouse Building as sample results reported levels of up to 80% friable asbestos inside the building. The Oven Building and Brick Office Building also contained friable asbestos exceeding the regulatory limit of 1%; however, the structures were significantly compromised and an in-situ wet demolition was deemed the best option for asbestos abatement. Samples collected from the former Manufacturing Warehouse Building reported levels greater than 1% in non-friable Category I intact materials. TSI associated with the North Storage Tank, Fire Riser, and ACM in the Conex Box also exceeded 1%.

Analytical results of water samples collected from the seven Utility Pits and Powerhouse basement, during the November 2018, assessment, indicated that the water did not contain any hazardous constituents and could be discharged to the sanitary sewer following field filtration. Soil samples collected north of the concrete foundation showed no asbestos detections. Additional potential sources of hazardous materials were identified including material within the Carbon Black Tank, oil-stained material on and around the Banbury Mixers, potential mercury-containing electrical equipment and stockpiled florescent lightbulbs located in the former Manufacturing Warehouse Building. Additional ACM was also suspected in the Autoclave Basement.

3 ACTIONS TAKEN

Removal activities conducted by EPA at the Site were completed into two separate phases (Phase I and Phase II) between June 2019 and January 2020. The Phase I emergency removal action was conducted between June and October 2019 and included the consolidation and excavation of debris, and off-site disposal of 19 asbestos-contaminated debris piles, along with debris created from the wet demolition of two structurally unsound buildings containing asbestos, to an approved disposal facility.

The Phase II time-critical removal action (TCRA) conducted between October 2019 and January 2020 was deemed necessary by EPA to remove the remaining identified hazardous material on-site, which posed a threat to public health, welfare, and the environment, as determined by 40 CFR §300.415(b). Phase II TCRA activities included the abatement of ACM inside the Powerhouse Building, Autoclave Basement, Utility Pits, and North Storage Tank. EPA also conducted remediation of hazardous materials identified as the carbon black, residue on the Banbury Mixers, miscellaneous hazardous waste inside the former Manufacturing Warehouse Building, and exposed chat.

START provided written and photographic documentation, monitored daily on-site weather conditions, performed confirmation sampling, and conducted perimeter air sampling and monitoring throughout the removal action. The on-site weather station data logs and daily particulate monitoring data are provided as Appendices F and G, respectively. Pollution Reports (POLREPs), generated monthly, provided status updates regarding removal action Site activities and are presented as Appendix H. The Site logbooks are included as Appendix I, and digital photographs are provided as Appendix J.

Specific information regarding the activities completed during the removal action are described in the following subsections.

3.1 COMMUNITY INVOLVEMENT

EPA held a community meeting at the Miami Civic Center on 06 June 2019 (beginning of Phase I). The meeting was conducted to inform the public of the upcoming removal action and address

any questions or concerns the public may have had. The local press was also in attendance, and reported the information provided by the EPA to the extended community. The presentation delivered at the meeting is included as Appendix K.

Prior to both Phase I and II removal activities, EPA distributed a factsheet outlining the Site history, information on the asbestos mineral, notification of the community meeting, and details of the intended removal actions. The factsheets were mailed to residential, municipal, educational, and commercial properties that directly surrounded the Site. The Phase I and II factsheets are provided as Appendix L.

3.2 PRELIMINARY FIELD ACTIVITIES AND SITE SETUP

Prior to mobilization, EPA obtained a signed EPA Consent to Access Property Agreement from the associated property owners to allow removal activities (Appendix B). Site preparation consisted of conducting a Site walk to determine locations of the perimeter air sampling and monitoring locations, the office trailers, disposal truck entry and exit routes, the truck decontamination area, and determining additional security measures. EPA also took measurements for the installation of a fence to improve the security of the Site.

In May 2019, EPA personnel, START, and ERRS contractors (EPA Team) conducted three site visits of the B.F. Goodrich Site in advance of removal activities to determine work zones, secure the site from trespassers, meet with the local authorities, perform structural building assessments, mobilize equipment, and further assess the Site in preparation for removal activities.

During the preliminary field activities, water was pumped out of the Powerhouse Building's basement, which was suspected to have accumulated from rain water and leaking pipes, to enable entry for assessment of the extent of ACM present and to obtain the approximate size or footprint of the basement. The water was pumped out using a 4-inch pump through a 5-micron filter as a precaution to remove any possible asbestos before entering the sanitary sewer.

A confined space entry of the Autoclave Basement was conducted to determine its size and to confirm the presence of ACM. Air monitoring during the entry was conducted using a MultiRAE and UltraRAE 3000 (benzene specific monitoring) to determine ambient air quality prior to

entering the work area and continuously while in both the Autoclave and Powerhouse Building basements.

A structural survey of the Brick Office Building and the Oven Building was conducted by an Oklahoma licensed engineer. Both were determined unsafe for access and wet-demolition was recommended to remove the presence of ACM. The Powerhouse Building was also surveyed and was deemed safe for entry and abatement of the ACM inside. ODEQ verified that no variance or permit was needed to conduct the demolition of the Brick Office Building and Oven Building.

Site setup, which began in May 2019, consisted of:

- Designating an area for removal truck decontamination
- Positioning the two office trailers on-site
- Constructing scaffolding for safe lining and wrapping the trailer beds of the removal trucks
- Establishing safe work zones
- Constructing a sprinkler system as an engineering control measure to reduce the chance of airborne ACM

Work zones and specific truck routes were established to reduce the accidental spread of asbestos around the Site. Each vehicle that entered the exclusion zone (debris pile area) was decontaminated at the decontamination pad prior to leaving the exclusion zone. These zones were delineated using cones and a rope. A “clean” road was designated from the support zone to the decontamination trailers (Contamination Reduction Zone) to enable access for the EPA team without contaminating their vehicles and to reduce the spread of ACM throughout the site. Level C Personal Protective Equipment (PPE) was donned in the contamination reduction zone, prior to entering the exclusion zone. To manage dust suppression due to the size of the Site, two water trucks provided additional dust control and transported water throughout the Site.

3.3 AIR SAMPLING AND PARTICULATE MONITORING

3.3.1 Perimeter Asbestos Air Sampling

Daily perimeter air monitoring was conducted throughout Phase I and Phase II removal actions. Prior to excavation of the debris piles, four baseline air samples were collected at each of the

originally proposed fixed air sampling and monitoring stations (Stations 01 to 04) on the study area boundary. One background sample was collected at the Miami Fire Department located at Goodrich Boulevard and A St. NW. These pre-removal samples were collected and analyzed for asbestos to establish a base level prior to excavation due to the ubiquitous nature of asbestos in the environment. A summary of the results are presented in Appendix M.

An additional sampling station (Station 05) was added to address the public's concern of the absence of a sample station north of the removal area. A particulate monitor was not associated with this sampling station as this was an unplanned location with substantial distance between the Site's perimeter and residing community members with a minimal potential for exposure.

The five fixed air sampling and monitoring stations were constructed on the perimeter of the Site at locations designated by EPA, between removal operations and the community. A total of five air samples were collected daily, weather permitting, during Phase I and Phase II to determine the presence of potential asbestos fibers as a result of debris pile excavation and loading activities. The air sample results and locations are illustrated in Figure 3-1.

The air samples were collected at one location on the north study area boundary (Station 05), two locations on the south (Stations 01 and 02) boundary, and two stations on the east study area (Stations 03 and 04) boundary. The air samples were collected using Allegro Rotary Vane high-volume air pumps and were collected on 0.45 micrometer (μm) mixed cellulose ester (MCE) sample cartridges. The air sampling pump flow rates were calibrated using a Sensidyne GoCal Air Flor Calibrator to run at approximately 6.5 liters per minute (l/min) for the duration of the excavation activities, approximately 10 hours each day. The sampling pump flow rates and start/stop times were documented on field data sheets each time the sampling pumps were deployed. The sampling and monitoring pumps at Stations 01 through 04 were powered by a dedicated public power supply and housed in waterproof boxes specifically installed for the removal action. The sampling pump at Station 05 was powered by a portable generator.

As an added precautionary measure, a microscopist was present on-site during the first 2 weeks of the removal action to provide same day analysis of the air samples. Sample results were used to determine the effectiveness of the engineering controls implemented by ERRS to reduce

particulate levels and/or concentrations of fibers. The samples were analyzed using the National Institute for Occupational Safety and Health (NIOSH) Method 7400, Phase Contrast Microscopy (PCM). If fibers were detected by the microscopist, the air samples were submitted to LabCor Portland, Inc. and analyzed by NIOSH Method 7402, Transmission Electron Microscopy (TEM) and results were reported on a 24 hour turn around basis to verify the presence or absence of asbestos fibers. If present, the TEM analysis also determined the type of asbestos fibers in the sample. Sampling activities were conducted in accordance with EPA 2008, OSWER Directive 9200.0-68.

The asbestos air sample action level set by EPA was 0.01 fibers per cubic centimeter (f/cc). This action level was determined by the Asbestos Hazard Emergency Response Act (AHERA) (Toxic Substance Control Act [TSCA] Title II). The action level was also set at a level below the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) of 0.1 f/cc. The results from the perimeter air sampling analysis throughout the removal action, indicated no detections of airborne asbestos fiber concentrations above the EPA action level of 0.01 f/cc. Summary air sampling results are provided as Appendix M.

As the perimeter air sampling results from Phase I indicated no detections of airborne asbestos fiber concentrations above the site action level of 0.01 f/cc; during Phase II activities, EPA decided to only analyze air samples located downwind of the prevailing daily wind direction. The remaining four samples were kept on hold at the laboratory, on a daily basis, for possible further analysis dependent on the results from the analyzed downwind sample. The amended approach to air sampling analysis for Phase II was implemented by EPA. Wind speed and direction were the two main factors that were used to determine the possible migration of asbestos fibers off-site; therefore, the sample located downwind of the prevailing downwind direction was more likely to detect the presence of asbestos fibers, if present.

3.3.2 Perimeter Particulate Monitoring

Stations 01 through 04 were equipped with an air sampling pump co-located with a DustTrak II Aerosol Monitor (Station 05 had no DustTrak). The particulate monitors provided daily data-logging and real-time particulate readings that were monitored and reported as suitable or not

suitable for continued excavation. Real-time data concentrations from the particulate monitors were transmitted via in-situ data loggers to the EPA team, which were also connected through the on-site telemetry system. During rain events, particulate monitors and sampling pumps were not deployed.

The DustTrak II particulate site action level of 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) on a 15-minute rolling basis was set for a site-specific action level for particulate monitoring, which is below the National Ambient Air Quality Standard (NAAQS) of $150 \mu\text{g}/\text{m}^3$ as measured on a 24-hour time-weighted average (TWA). Daily particulate monitoring data logs are included as Appendix G. Instantaneous readings above the site-specific action level were noted due to the proximity of vehicular traffic on the public roads surrounding the Site and grass cutting in the public right-of-ways; however, no exceedances of the 8-hour TWA occurred during the removal action. Although exceedances were not related to removal operations, additional water was applied to the concrete pad and roads on-site as a precaution.

3.3.3 Telemetry System and Weather Station

Real-time particulate data concentrations from the DustTrak IIs were collected using a wireless telemetry system. The telemetry system used Campbell Scientific, Inc. (CSI) CR800 Measurement and Control Data loggers to record data from the DustTrak IIs and the weather station. The four DustTrak II were networked via CSI RF401 900-MHz Spread-Spectrum radios to the weather station, which was equipped with a Sierra Wireless RV50 industrial 4G LTE cellular gateway. The cellular gateway allowed real-time access to current Site conditions from Internet-connected devices. A local computer in the command trailer was used to collect and display the data for management, analysis, and visualization by the EPA team. If communication issues occurred between the DustTrak IIs and telemetry system, manual readings of particulate levels were collected.

The on-site weather monitoring equipment was constructed prior to excavation activities. The weather station was equipped with an R.M. Young Heavy Duty Wind Monitor Model 05108-45 wind speed and direction sensor mounted on top of a 10-foot metal pole, which was secured to the side of the EPA office trailer. The unit documented no interference by other objects and it

maintained a good line of sight to the DustTrak II stations. The weather station also had sensors for temperature, relative humidity, barometric pressure, precipitation, and lightning. All weather sensors were monitored by a CR800 data logger. The on-site weather station data logs are provided as Appendix F.

The weather station CR800 collected 15-minute average dust readings from the DustTrak stations every 5 minutes. If the concentration at a station exceeded the $100 \mu\text{g}/\text{m}^3$ action level, the CR800 sent text alerts to the on-site START staff and EPA OSC cell phones. Text alerts were repeated every 15 minutes until concentrations dropped below the particulate site action level. A text alert was also received if lightning was detected in the vicinity of the Site between 0 to 25 miles away. The distance and number of strikes was reported at 5-mile intervals every 5 minutes.

The weather station CR800 monitored wind conditions using the National Oceanic and Atmospheric Administration (NOAA) Automated Surface Observing Systems (ASOS) algorithms for wind observations and gusts. The ASOS gust readings were used in conjunction with EPA's Goodrich Asbestos High Wind Policy (Wind Policy) to provide real-time alerts to on-site START staff and the EPA OSC. The Wind Policy is provided as Appendix N. The CR800 monitored and reported gusts exceeding the 23- and 30-mile-per-hour (mph) thresholds set by the Wind Policy. If the threshold wind speeds were met, START notified EPA and ERRS who then implemented additional dust suppression measures.

3.3.4 Office Air and Dust Sampling

As a safety precaution to on-site workers, additional air and dust samples were collected on a monthly basis from each office trailer to monitor for the presence of asbestos. The indoor dust samples were analyzed using American Society for Testing and Materials International (ASTM) Method D5755-03. *Standard Test Method for Micro Vacuum Sampling and Indirect Analysis of Dust by TEM for Asbestos Structure Number Surface Loading.*

Samples were collected using a microvacuum (microvac) technique that's designed for collecting samples of non-airborne dust to determine levels of asbestos structures present. Gilian GilAir Plus low-flow sampling pumps calibrated with a Sensidyne GoCal air flow calibrator to 2 liters per minute (l/min) were used to collect microvac dust samples from the floors and surfaces inside the

office trailers on-site. A closed-faced 0.8 μm MCE filter with a 1-inch length of tubing cut to a 45-degree angle at the tip was used to collect each sample within a 10-by-10 centimeter (cm) template for 1 minute.

A minimum of two dust samples were collected in each office trailer per month. Results from the surface microvac office trailer samples collected on 16 November 2019, reported a low level detection of asbestos inside both EPA and ERRS office trailers. One fiber was detected inside the EPA trailer at a concentration of 897 structures per centimeters squared (s/cm^2) and two fibers were detected in the ERRS trailer at a concentration of 1794 s/cm^2 , both were below the action level of 5000 s/cm^2 determined by EPA (U.S. EPA 2003a, 2005). The air samples collected in conjunction with the microvac samples during the November trailer sampling event did not detect any asbestos fibers. Due to the detection, ten additional microvac samples (five in each trailer) were collected to determine if asbestos was prevalent throughout both offices. Laboratory analysis of the additional samples collected reported zero detections of asbestos fibers.

Indoor ambient air samples were collected in conjunction with the microvac dust samples, on a monthly basis inside each office trailers on-site. The air samples were collected using NIOSH Method 7400, Issue 3. PCM and TEM analysis followed the same procedure as the perimeter samples collected. This test method covers a procedure to identify asbestos in the ambient air of working areas (i.e. command post) and to identify whether on-site decontamination procedures are sufficient to prevent asbestos from entering areas where respiratory protection is not required.

High flow Allegro Rotary Vane sampling pumps calibrated between 12 and 13 l/min were used to collect the ambient air samples. The pumps were calibrated using a Sensidyne GoCal air flow calibrator. Samples were collected using a 0.45 μm MCE filter, and the pumps were operated for approximately 75 minutes.

Results from the office air sampling conducted each month of the removal action showed one detection on 09 September 2019, consisting of two asbestos fibers at the concentration of 0.0019 f/cc, which was below the Site action level of 0.01 f/cc. As a precaution, EPA initiated a thorough cleaning of the office trailer where the detection occurred, donning level C PPE and using wet cleaning methods. On 13 September 2019, after cleaning, three confirmation microvac dust

samples were collected from the floor of the trailer. No asbestos fibers were detected in the confirmation dust samples collected.

3.4 PHASE I REMOVAL ACTION

Phase I emergency removal activities were conducted from June through October 2019. These included the consolidation, transportation, and disposal of 20 demolition debris piles, the in-situ wet demolition of two buildings, and disposal of subsequent debris to the approved disposal facilities. Details of the removal activities conducted are presented in the following subsections.

3.4.1 Debris Pile Removal

Demolition of the former B.F Goodrich plant created 20 demolition debris piles that were located primarily on the plant's foundations (concrete pad). Specific size and locations of debris piles are illustrated on the Site Removal Map in Figure 3-2. Varying amounts of damaged Category I and Category II asbestos were previously identified during the assessment of 19 of the 20 debris demolition debris piles. Category I asbestos is defined as Non-friable ACM and refers to asbestos containing packing, gaskets, resilient floor covering, Galbestos, and asphalt roofing products containing more than 1% asbestos and Category II asbestos is defined as Non-friable ACM that is not Category I that contains greater than 1% asbestos. To facilitate efficient removal actions, scattered site debris was consolidated with debris pile material. Debris pile 20 consisted of recyclable metal and did not contain ACM therefore, it was recycled by EPA along with other metal that accumulated throughout the removal action.

Excavation of the debris piles began on 07 June 2019. ERRS used one large trackhoe excavator (Komatsu PC 200LC), one mini excavator (TB290), and a skid steer (Case TR310) to load removal trucks and consolidate the debris piles. Prior to the removal trucks entering the exclusion zone, ERRS lined each truck bed with 6 millimeter (mm) plastic liners to encapsulate the debris after loading. Once a removal truck arrived at the designated debris pile, the driver switched off the engine and remained inside the cab of the vehicle in order to minimize any exposure risk. ERRS then loaded removal trucks with debris using a trackhoe excavator.

During any movement of debris, ERRS continuously wet the debris pile and the load of material going into the truck using a minimum of one fire hose, depending on wind speeds. Personnel working in the exclusion zone donned level C PPE. Once the removal truck was loaded, the debris was wrapped with the plastic sheeting and sealed with glue and tape. Each disposal truck was equipped with an automatic tarp that was used to cover the wrapped waste material before leaving the site. After the debris was sealed, the removal truck was then decontaminated using a power washer at the decontamination pad before leaving the Site for either the AEL in Sand Springs, Oklahoma, or Prairieview Landfill in Lamar, Missouri, on a predesignated route to minimize impact to the local community.

Lined roll-off boxes were used in areas where immediate loading was not practical to remove the debris off-site. The roll-off boxes were also lined with 6-mm plastic sheeting and subsequently sealed before being transported to the approved landfills by Collins Roll-Off Services from Miami, Oklahoma.

3.4.2 Building Demolition

The Oven Building and Brick Office Building were deemed structurally unsound during the November 2018 assessment. Abatement/removal of the ACM identified inside each of the buildings could not be performed and therefore would require a wet demolition in place. Between 09 July and 11 July 2019, ERRS conducted the demolition of the Oven Building and Brick Office Building located to the northeast and west of the office trailers, respectively. The specific location can be seen in the Site Removal Map on Figure 3-2. Two water cannons (Moby Dick cannon 50-B) and one fire hose were used for the duration of the demolitions. These additional dust suppression methods were established to document that both buildings were kept saturated throughout the demolition and therefore greatly minimized the potential for asbestos to be released into the environment. The demolition debris was loaded into removal trucks, continuing the same engineering controls as used during debris pile excavation to contain the ACM, and transported to the approved landfills.

Approximately 18,174 tons of ACM were excavated from the debris piles and building demolition debris and transported to the Prairieview Landfill in Lamar, Missouri. Approximately 2,131 tons

of ACM were transported to AEL in Sand Springs, Oklahoma. Two landfills were used to maximize efficiency of debris removal due to different weekend operational hours. Waste profiles, disposal request, and manifests are provided as Appendix O.

After the debris piles and demolition debris was excavated, the concrete pad was cleaned to further remove any remaining ACM. A skid steer was used with a rotating broom attachment. This was water fed to minimize dust creation, where possible. Any hard-to-reach areas were hand dug by ERRS.

Investigation-derived waste (IDW) and PPE such as plastic scoops, gloves, tape, and Tyvek® was bagged and disposed of by ERRS as part of the removal action.

3.4.3 Evaluation of Remaining On-Site ACM and Hazardous Materials

Soil samples from the right-of-way, along the eastern and southern perimeter of the Site were collected to determine the extent of potential ACM contamination. Prior to sampling, EPA contacted the Miami City Council to inform them of this plan. A sample grid system of 22 grids (G87 through G108), approximately 2,500 square feet, were established along the eastern and southern perimeter in the right-of-way from the Site's fence line to the road.

On 25 September 2019, 25 five-point composite soil samples were collected (including quality control [QC] samples), from 0 to 6 inches bgs from the 22 designated grids. The soil was homogenized in 1-gallon plastic bags then sealed, labeled, and shipped overnight to Eurofins EMLab P&K laboratory for asbestos analysis by method California Air Resources Board (CARB) 435, Polarized Light Microscopy (PLM)-400-point count. No asbestos was detected in any of the soil samples collected. The grid locations and sample results are illustrated in Figure 3-3.

To determine the extent of the remaining ACM on-site, additional bulk material samples were collected from areas identified as PACM inside the Autoclave Basement as well as the covered areas of the Utility Pits, which are basement like areas at the east end of the Utility Pits 02, 05, and 06, with a concrete ceiling and filled with PACM, covering tanks, pipes, and other industrial items. Forty-five bulk samples were collected from the Autoclave Basement on 09 August 2019, from various TSI throughout the basement. Forty bulk samples were also collected from the covered

areas of Utility Pits 02, 05, and 06 on 11 November 2019. The samples were submitted to LabCor Inc. in Portland, Oregon for asbestos analysis via EPA Method 600/R-93/116, Bulk Asbestos Analysis by PLM. Asbestos was detected in 14 of the 40 samples collected from the three Utility Pits Sampled. A table summarizing the results of all samples collected is provided as Appendix M.

Due to the results from the evaluation of the remaining ACM, an Asbestos Project Design was created by a START subcontracted Oklahoma licensed Asbestos Project Designer that provided a detailed course of action for handling the abatement of identified ACM located inside the Autoclave Basement, Utility Pits, and North Storage Tank (previously sampled during the 2018 Site Assessment) in accordance with applicable federal, state, and local laws. The Asbestos Project Design is provided as Appendix P.

On 09 October 2019, two waste samples of the oil/grease residue on and around the Banbury Mixers, and two wastewater samples in the pits around the Banbury Mixers, were collected to determine whether they were hazardous. The samples were analyzed for chemical constituents following the Toxicity Characteristic Leaching Procedure (TCLP) analyses by SW-846 Methods 1311 (TCLP prep), for volatile organic compounds (VOCs), for semi-volatile organic compounds (SVOCs), for pesticides and herbicides, and for Target Analyte Metals (TAL) metals/mercury. The two waste samples collected from the Banbury Mixers showed detection levels above the Resource Conservation and Recovery Act (RCRA) TCLP limit values for barium, cadmium, chromium, and lead. Due to the detections, EPA directed ERRS to remove the residual oil/grease and disposed of it as hazardous waste. A table summarizing the results of all samples collected is provided as Appendix M.

EPA directed ERRS to conduct an inventory of hazardous and non-hazardous material remaining in the former Manufacturing Warehouse Building. Specific items that could not be identified were subject to a chemical field identification by a qualified ERRS team member using a HazCat® kit to determine the nature of the product. The materials identified were then separated into their respective waste streams and secured in preparation for removal. Materials identified included fluorescent lightbulbs, fire extinguishers, household cleaning material (bleach, paint, solvents, floor stripper, etc.) herbicides, pesticides, and surfactants.

3.5 PHASE II REMOVAL ACTION

Phase II TCRA was conducted from October 2019 through January 2020. These activities included the abatement of ACM inside the Powerhouse Building, removal of ACM from inside the Autoclave Basement and Utility Pits, removal of the carbon black and miscellaneous hazardous material inside the former Manufacturing Warehouse Building, and cleaning of the Banbury Mixers. The locations of the Phase II removal activities are illustrated in Figure 3.2. All materials removed from the Site were disposed of at an approved disposal facility. Details of the removal activities conducted are presented in the following subsections.

3.5.1 Powerhouse Building

Asbestos abatement operations inside the Powerhouse Building began on 25 October 2019, by an ODOL-licensed abatement contractor (Asbestos Handlers, Inc.) procured by ERRS. Prior to removal of ACM, the Powerhouse Building was enclosed, where applicable, creating a critical barrier containment to isolate the work areas. A decontamination unit was established and a sealed roll-off box for ACM debris removal was connected directly to the building to reduce the possibility of potential release of asbestos fibers. ODOL conducted a preparation inspection on 25 October 2019, before the start of removal activities, which began on 29 October 2019. These work practices were in accordance with ODOL Oklahoma Asbestos Control Act 40 O.S. §450, et seq. Abatement of Friable Asbestos Rule OAC 380:50 (ODOL, 2016). A Powerhouse Abatement Project Design and a schematic diagram with total estimated ACM inside the Powerhouse Building is provided as Appendix Q.

Abatement procedures included the removal of ACM in an adequately wet condition using fine misting equipment, keeping removed material adequately wet enough to prevent fiber release. The wetted ACM was removed in manageable sections by hand, using cutting tools. The removed material was placed in 6-mm labeled disposal bags that were sealed and then placed inside the attached sealed roll-off box for removal from the Site. The surrounding areas were periodically sprayed to keep them wet until visible ACM was properly containerized. Once ACM from an area had been removed, the area was thoroughly cleaned using water. The final stage of abatement

before clearing the building was to apply an encapsulation paint that isolated any stray asbestos fibers.

During abatement activities, an ODOL-licensed third-party air contractor (Earth Tech Enterprises, Inc.) conducted daily air sampling inside and outside the work area at six locations: outside the entrance/exit, at the negative air exhausts, at the decontamination trailer, and at the load-out roll-off box. Personnel air samples were also collected from the breathing zone of 25% of the abatement crew, for the duration of the workday. Each air sample was analyzed using the NIOSH Method 7400 –PCM, with the option for TEM analysis by NIOSH Method 7402 if fiber concentrations were detected above the site action level, which did not occur in this instance. Air samples were collected in accordance with Oklahoma Asbestos Control Act. The air sampling results and logs are provided as Appendix R.

Nineteen bulk asbestos samples were collected from boiler three inside the Powerhouse Building to confirm whether the TSI contained asbestos and would need removing. The bulk samples collected were analyzed following Method EPA 600/R-93/116, Bulk Asbestos Analysis by PLM. Asbestos was detected in one sample collected from the rope gasket around on one of the boiler doors, this was subsequently removed by the abatement contractor. No asbestos was detected in any of the other samples collected.

Abatement of the ACM in the main floor of the Powerhouse Building was completed on 17 January 2020. Following the final cleaning activities and application of the encapsulation paint to the inside of the entire building, five confirmation air samples were collected by the third-party air clearance contractor using an aggressive air clearance method and running a leaf blower inside. The high volume sampling pumps were run at volume rate of 10 l/min for 120 minutes. The sample results showed no asbestos detections above the NESHAP clearance level of 0.01 f/cc. ODOL then conducted a visual inspection and verified the completion of the abatement work as required by the ODOL Oklahoma Asbestos Control Act.

Pumping water out of the Powerhouse Building Basement began after the first floor had been cleaned. Once the water was removed, the same preparation procedure commenced with critical barrier creation and a preparation inspection was conducted by ODOL, which was passed on 17

January 2020. Removal procedures followed those of the main floor with wet removal and bagging of debris followed by a final clean and application of encapsulation paint. The third-party air clearance contractor conducted clearance sampling of the Powerhouse Building basements on 31 January 2020. Associated sample results reported no asbestos detected above the clearance level of 0.01 f/cc. ODOL conducted their final visual inspection confirming the completion of the basement.

Approximately 660 cy³ of ACM was removed from the Powerhouse Building and basements and disposed of at AEL in Sand Springs, Oklahoma. The waste manifest and ODOL inspection paperwork are provided as Appendix S.

3.5.2 Utility Pit Debris Removal

There are seven Utility Pits located at the Site (UP-01 to UP-07), six of which are located to the west of the former Manufacturing Warehouse Building and the seventh is located to the west of the Carbon Black Tank. The specific locations of the Utility Pits are illustrated in Figure 3.2. Asbestos-containing debris from the demolition of the original B.F. Goodrich plant in 2014 was deposited into the Utility Pits around the Site following demolition. Utility Pits 02, 05, and 06 also house an additional covered area that contained TSI-covered piping and tanks along with the demolition debris, which was confirmed through the collection of bulk asbestos samples, from these areas, previously mentioned in this report. An ODOL-licensed asbestos inspector, working as part of the EPA team, created a detailed project design for the removal of ACM debris from the Utility Pits, which is provided as Appendix P.

The Utility Pits were filled with water and required pumping out; the majority of the water was recycled for use as dust suppression around the Site and the remaining water pumped into the sanitary sewer. After removing the water, the large and small excavators were used to remove the majority of the debris, which was loaded directly into removal trucks and placed in lined roll-off boxes stationed next to the Utility Pits. Full dust suppression methods were implemented for the entire removal operations of the Utility Pit debris as was used with the debris pile excavation in Phase I. Once the majority of the debris was removed, two skid steer walk behinds were lowered inside the pits to collect the remaining debris. The cement ceilings of the covered areas were

broken using a hydraulic hammer attachment to the excavator and re-bar was cut using a torch to remove the ACM contained inside them.

Following debris removal, safety fencing was erected with warning signage around the opened covered areas of UP-02, 05, and 06 as a precaution for anyone entering the Site.

3.5.3 Autoclave Abatement

Prior to removal abatement activities inside the Autoclave Basement, the ODOL-licensed EPA team member conducted an assessment of the work area and produced an abatement project design for the Autoclave Basement as previously mentioned. The detailed project design is included as Appendix P.

Critical barriers were constructed to cover openings into the Autoclave Basement to isolate the area before removal activities were conducted. The majority of ACM inside the Autoclave Basement consisted of TSI-covered pipes and tanks that ran throughout the basement. Previous demolition and abatement activities left significantly damaged equipment and large amounts of friable asbestos debris on the floor of the Autoclave Basement. Due to these special circumstances, deviation to the ODOL Oklahoma Asbestos Control Act were proposed and accepted under ODOL 380:50-17-13. Industrial applications of rules were applied where, “In such cases, an industry or contractor may submit, in advance, an alternate plan of action to accomplish abatement.”

Abatement methods included cutting small, isolated sections of intact TSI, which covered pipes and tanks, into manageable sections. During this process, water was constantly applied to the area being abated via standard NESHAP wet and manual methods to eliminate visible emission. Each section of intact TSI component was placed in two layers of 6-mm polyethylene sheeting and sealed using tape prior to removal. Each component section removed was then placed in lined roll-off boxes using an excavator for off-site disposal, which were subsequently sealed before removal from Site.

The friable asbestos debris located on the floor of the Autoclave Basement was kept continuously wet before sealing in 6-mm polyethylene sheeting using the same method as the intact TSI removal. This enclosed debris was also placed in a lined roll-off box along with the TSI for off-

site disposal. The ODOL- licensed EPA team member was present on-site during the beginning of abatement to assist in identifying or sampling additional materials that were not accessible prior to cleaning and dewatering.

As with the Powerhouse Building abatement, following the removal of ACM, the Autoclave Basement was washed from ceiling to floor with water and the asbestos encapsulating spray was applied to the entire area to encapsulate and secure any remaining fibers. On 21 January 2020, an ODOL-licensed third-party air clearance contractor conducted air clearance sampling using the same aggressive air clearance methods as those used for the Powerhouse Building air clearance sampling. Four air clearance samples were collected at various locations throughout the Autoclave Basement and were run for 120 minutes at 10 l/min. Each air sample was analyzed by NIOSH Method 7400– PCM, with the option for TEM analysis by NIOSH Method 7402 if fiber concentrations were detected above the site action level, which did not occur in this instance. Air samples were collected in accordance with Oklahoma Asbestos Control Act. No asbestos was detected in any of the associated samples above the clearance level of 0.01 f/cc. Sample results are provided as Appendix R.

3.5.4 Miscellaneous ACM Removal

During the initial Site Assessment conducted by EPA in November 2018, TSI material abated from the original demolition was found stored in a Conex Box on-site. The partially wrapped TSI was loaded into a lined roll-off box using an excavator for off-site disposal. During the removal operations, the ACM was kept continuously wet. After the ACM was removed, the Conex Box was decontaminated. To confirm the cleaning process was successful, two microvac dust samples were collected at random locations on the floor of the Conex Box, employing the same method used during office sampling. The dust samples were analyzed for asbestos using ASTM Method D5755-03. Standard Test Method for Micro Vacuum Sampling and Indirect Analysis of Dust by TEM for Asbestos Structure Number Surface Loading. No asbestos was detected in either of the samples.

ERRS abated the TSI material located on the North Storage Tank pipe using the glove bagging method, isolating manageable sections of the pipe, which were then covered with 6-mm

polyethylene and sealed with tape. This abatement method documented that the TSI material was properly encapsulated. Before the pipe was covered, the TSI was wetted as a precaution to eliminate any fibers being emitted. Each sealed component was then placed in a lined roll-off box for disposal.

3.5.5 Removal of Additional Hazardous Materials

3.5.5.1 Carbon Black Tank

In January 2020, 53.82 tons of carbon black was removed and disposed of at the AEL in Sand Springs, Oklahoma. Due to the fine nature of carbon black, it was removed from the Carbon Black Tank using vacuum trucks, placed in roll-off boxes, and then transported to the designated landfill. Once the removal of the carbon black was completed, the tank was washed with 2.46 tons of water that was then contained and subsequently disposed of at AEL, Sand Springs, Oklahoma.

3.5.5.2 Banbury Mixers and Surrounding Pits and Troughs

Four Banbury Mixers remained on-site, located south of the Powerhouse Building. They were previously used to mix and compound rubber with additives as part of the tire manufacturing line and left covered in an oil and grease residue. Using a man lift, the Banbury Mixers were hand scraped to remove the oil and grease residue. Degreaser was then applied using spray bottles. To complete the cleaning, the Mixers were washed using a hot water pressure washer. To contain the wastewater and sludge, a bermed area was constructed around each of the Banbury Mixers.

Surrounding the Banbury Mixers were a number of troughs and pits of varying size and length. Each had been filled with demolition debris and therefore required cleaning. Debris from the pits and troughs were hand dug and loaded into a lined roll-off box using the mini excavator. The polyethylene liner was sealed before the roll-off box was removed from the Site. During these removal operations, the debris was kept wet per the dust suppression methods and disposed of at AEL in Sand Springs, Oklahoma.

3.5.5.3 *Manufacturing Warehouse*

The hazardous and non-hazardous waste found in the former Manufacturing Warehouse Building was separated and packaged according to waste stream characteristics. In January 2020, USA Hazmat, a national waste disposal company contracted by ERRS, collected the material from the warehouse and disposed of it at the appropriate landfills. The waste removed from the former Manufacturing Warehouse Building and their disposal locations included:

- One roll-off box of hazardous corrosives disposed of at Waste Management Emelle, Alabama
- Three metal drums with hazardous waste paint disposed of at Ashgrove Chanute, Kansas
- One plastic drum of hazardous waste solids disposed of at Republic Services Courtney Ridge Landfill, Missouri
- One plastic drum of hazardous waste aerosols disposed of at Hazmat Inc. Recycling
- Sixty-eight cartons of hazardous waste lamps (2,388 8' & 4' lamps) disposed of at LEI Hammond, Louisiana
- Forty-three cartons of hazardous waste lamps 4' disposed of at LEI Hammond, Louisiana
- One carton of hazardous paint-related materials disposed of at Ashgrove Chanute, Kansas
- One plastic drum of hazardous liquids disposed of at Green America, Hannibal, Missouri
- One metal drum of non-hazardous oils disposed of at Republic Services Courtney Ridge Landfill
- Two metal drums of non-hazardous paint disposed of at Republic Services Courtney Ridge Landfill
- One metal drum of non-hazardous wastewater disposed of at Republic Services Courtney Ridge Landfill

EPA recycled approximately 350 industrial light fixtures and fittings and delivered them to the Fortex Fortiflex warehouse located directly to the west of the Site at 1410 Goodrich Boulevard.

Asbestos located in the former Manufacturing Warehouse Building consists of non-friable Category I intact materials and was not removed as part of this assessment. It was determined by the ODOL-licensed EPA team member that the materials presented a minimal risk and should be addressed with future reuse plans for the building by the current owner.

3.5.5.4 Exposed Chat

Suspected chat was sampled and removed from areas scattered around the Site. Chat is a gravel-like waste created from lead and zinc mining activities. In the process of mining and screening fine washed sand, a coarse grained small gravel remains. Twenty-four samples (including quality control [QC] samples) were collected from on-site locations where suspected chat, through visual observations, were present. Samples were collected from 0-to-6 inch bgs in laboratory grade 8-ounce glass jars using a metal spade, which was decontaminated between each sample location. The samples were submitted to Eurofins TestAmerica laboratory located in Houston, Texas, for lead analysis using SW-846 Method 6020. Lead was detected at concentrations above the EPA residential regional screening level (RSL) of 400 milligrams per kilogram (mg/kg) at four locations: two located along the east road, one in the large sink hole, and one in the trough between UP-01 and UP-02 where the concrete pad had deteriorated. A summary of the analytical results are provided in Appendix M. In order to determine an appropriate disposal location, the four sample locations that had exceedances above the EPA RSL for lead were resampled to determine if asbestos was also present. Two of the four locations had trace (<0.25%) detections of asbestos. The sample locations and specific results are illustrated on Figure 3-4.

Due to the elevated lead concentrations reported in the sample results, EPA directed ERRS to remove the exposed chat around the Site where feasible. The soil containing chat that had accumulated over the edge of the concrete along the east road was scraped down to the concrete, leaving no soil remaining on the road. Water was applied to the soil during removal operations due to the trace detections of asbestos and to reduce the possibilities of airborne asbestos fibers. A mini excavator was used to remove the exposed chat from under the concrete pad in the trough running between UP-01 and UP-02. Once the exposed chat was removed, where practical, the trough was backfilled with rock and concrete walls on either end of the trough were constructed to contain the material and reduce future exposure of chat on-site. A sinkhole where the fourth sample was collected was also backfilled with rock and graded. The chat and associated soil were disposed of at AEL, Sand Springs, Oklahoma.

3.5.5.5 Concrete Pad Clearance Sampling

Air clearance sampling of the concrete pad was conducted to verify removal of ACM contaminated debris. The pad was divided into a system of 122 grids to determine if the concrete pad had been successfully cleaned. The air clearance samples were randomly selected from 12 of 122 grids (10% of grids, covering the entire pad). Samples were collected using an EPA-verified method as determined in the EPA 2008, Framework for Investigating Asbestos-Contaminated Superfund Site guidelines to disturb the settled dust on the pad while collecting an air sample to determine the risk of exposure to asbestos from dust on the concrete pad (EPA, 2008). A detailed description of the sampling protocol is provided as Appendix T.

Each sampling event was conducted for 100 minutes using a leaf blower to disturb the dust. Two Allegro Rotary Vane high volume air pumps were set at 12 l/min to collect a minimum of 1200 liters through each sample medium. One pump was located downwind and the other was located upwind from the center of the grid. The leaf blower was operated in a sweeping motion directed toward the ground, maintaining a minimum of 10 feet from the sampling pumps so as not to overload the cassettes with particulates, which would make them unreadable. Sampling was conducted in level C PPE. The air samples were collected on 0.45 µm MCE sample cartridges, analyzed using NIOSH PCM Method 7400 and, as with perimeter samples, NIOSH TEM method 7402 analysis if fibers were detected using the PCM analysis. The air samples were submitted to LabCor, Inc. Portland, Oregon. No asbestos fibers were detected in the clearance air sampling. The sample results and locations are illustrated in Figure 3-5.

3.5.5.6 Confirmation Sampling

Following completion of the removal of ACM identified during Phase II, two water samples were collected from the decontamination pad in January 2020, and analyzed for asbestos by method EPA 100.2 - *Determination of Asbestos Structures Over 0.5 µm in Length in Drinking Water*, a TEM method. Asbestos fibers larger than 10 µm were detected in both samples at concentrations of 22.01 and 26.8 million fibers per liter (MFL). Based on the results, the decontamination water was disposed of into the storm water drain through a 5-µm filter attached to a water pump to remove residual asbestos fibers.

Confirmation dust samples were collected from the trailers and Conex Boxes that were used to store equipment throughout the removal action after they had been cleaned. Samples were collected using the standard dust sampling method previously detailed in the office sampling section. A Gillian GilAir Plus low volume pump was used, run at 2 l/min for 1 minute using a 10-by-10 cm template. The samples were analyzed for asbestos using the ASTM D 5755-09 – Microvacuum sample method – *TEM*. Samples collected showed no asbestos detected.

Two dust samples were collected from the floor of each office trailer on-site following removal of furniture and completion of a thorough wet clean. The samples were collected using the standard dust sampling method previously detailed in the office sampling section. A Gillian GilAir Plus low volume pump was used, which was run at 2 l/min for 1 minute using a 10-by-10 cm template. Asbestos was detected in one of the dust samples collected with a concentration of 7178.57 structures per cubic centimeter (s/cc), which is above the EPA action level of 5000 s/cc (EPA 2003a, 2005). The detection appeared to be an anomalous result considering previous office sampling results were below the action level. To confirm the office trailer was clean, the EPA OSC directed ERRS to re-clean and re-sample the trailer using the standard dust sampling method and equipment originally used. ERRS collected the second confirmation office sample on 06 February 2020, the results of which showed no asbestos detected.

3.6 OVERLAND FLOW PATH SAMPLING

Under direction of the EPA, START conducted soil sampling along a potential off-site overland flow path, observed during instances of heavy rain, to determine possible off-site migration of contaminants. Fifteen soil samples were collected, including QC and background samples. The overland flow path sampling locations originated north of the Banbury Mixers and continued every 200 feet east off-site moving north along the drainage ditch located in the right-of-way of H Street NW and terminating at a culvert running east under the road. Samples were analyzed by Eurofins TestAmerica, located in Houston, Texas, for VOC, SVOC, TAL metals, Polychlorinated Biphenyls (PCB), and Total Petroleum Hydrocarbons (TPH). The soil samples were also analysed for asbestos by LabCor Inc., Portland, Oregon. At sample locations G09 and G10, trace levels of asbestos (<0.25%) was detected in the soil samples. Two samples reported detections above the EPA RSL for benzo[a]pyrene at 4.85 mg/kg and 4.89 mg/kg at locations G12 and G13. No other

sample concentrations exceeded the RSLs for any other reported analytes. A summary of the analytical results is provided as Appendix M. Figure 3-6 illustrates the specific sample locations with analytical exceedances.

At the two locations where trace asbestos (<0.25%) was detected (G09 and G10) a 6-inch scrape was conducted to remove the top soil located north of the Banbury Mixers. After the removal of contaminated soil was completed, two grids were established to maintain control of the designated sampling area by using GPS and survey flags. Two five-point composite soil samples were then collected to confirm the removal of asbestos-contaminated soil using a metal spade, which was decontaminated after each grid was sampled to document no cross contamination occurred. The soil was homogenized in 1-gallon plastic bags then sealed, labeled, and shipped to LabCor, Inc. laboratory for asbestos analysis by method CARB 435, PLM 400-point count. No asbestos was detected in any of the soil samples collected.

3.7 RECYCLING

Throughout both Phases of the removal action, ERRS separated the recyclable metal from the debris and demolition piles around the Site, where possible. The metal was washed so no asbestos contamination remained before it was collected by Briscoe Scrap Recycling Company, located in Quapaw, Oklahoma, and removed off-site. A total of 249.32 tons of metal was recycled throughout the removal action: 82.72 tons in Phase I and 166.60 tons in Phase II.

3.8 SITE RESTORATION

Perimeter fencing installed at the beginning of the removal action remained in place to secure the Site. Open pits and troughs were backfilled with rock where possible. Pits and troughs too large to fill, had safety fencing erected and signs posted to warn persons entering the Site of the open pits. A broken storm drainpipe that had been exposed due to the collapse of the pad, and opening of a sinkhole, was repaired. After the repair, the sinkhole was backfilled with rock and graded. Equipment used during the removal action was demobilized and keys to the locks securing the Site were handed over to the Ottawa County Commissioner, Mike Furnas, at the completion of removal activities.

3.9 REMAINING ITEMS ON-SITE

During the Powerhouse Abatement, a tunnel running underground, from north of the Banbury Mixers to the south side of the Powerhouse Building was discovered. Pipes covered in PACM and running the length of the tunnel were visible; however, the tunnel and piping were deemed unsafe for entry to complete abatement. One end of the tunnel was backfilled with rock. Warning signs were posted for asbestos presence and orange plastic fencing was installed to prevent access.

Visible, exposed chat was removed from the Site; however, due to the location of the majority of the chat (underneath the deteriorated concrete pad), it is possible more material could be exposed if the concrete pad becomes weathered or is disturbed in areas across the Site. If future reuse includes removal of concrete foundations or soil excavations it is recommended that appropriate precautions are established to address potential uncovering of ACM located in pipe tunnels or chat used as fill material.

As discussed above, asbestos remains in the former Manufacturing Warehouse and the Powerhouse Building that consists of non-friable Category I intact materials. At the time of this report, the materials present are intact, present minimal risk, and should be addressed with future reuse plans for the building by the current owner.

Benzene plume monitoring by GHD Ltd. was conducted throughout the removal action. The sampling event planned during Phase I was postponed by GDH Ltd. due to logistical challenges presented during the removal efforts. GHD Ltd. made the decision to return during Phase II once the debris piles were cleared and the monitoring wells could be easily accessed, and monitoring was conducted by ODEQ and Michelin. The locations of the monitoring wells are provided as Appendix U.

EPA's removal and assessment operations were focused on the specified area laid out in this removal action report covering the 47 acres previously mentioned and owned by Ottawa County. The areas outside of the former concrete pad were not evaluated by EPA. The primary focus of the EPA removal action was to remove asbestos contaminated materials from the Site. Sampling for other hazardous constituents (other than those mentioned above – chat, materials inside the former

Manufacturing Warehouse Building, carbon black, and soil in the overland flow path from the Banbury Mixers) was not conducted.

4 SAMPLE ANALYSIS AND DATA VALIDATION

Removal action activities were conducted in general accordance with the June 2019 QASP (Appendix A). The activities conducted for these tasks include:

- Sample Analysis and Data Reporting
- Data Validation

Analytical data packages are provided in Appendix V.

4.1 SAMPLE ANALYSES AND DATA REPORTING

Air, soil, bulk asbestos, dust, and water samples were collected during the removal action and were analyzed by LabCor, Inc. located in Portland, Oregon for the following:

- Soil samples were analyzed for asbestos by CARB Method 435, *Bulk Asbestos - Polarized Light Microscopy (PLM), 400-point count – modified for soil matrix.*
- Solid/bulk samples were analyzed for asbestos as follows: *EPA Method 600/R-93/116–Asbestos (bulk) by PLM.*
- Water samples were analyzed for asbestos by TEM EPA 100.2 – *Determination of Asbestos Structures Over 0.5 μ m in Length in Water.*
- Perimeter air samples were analyzed by NIOSH Method 7400 – *Phase Contrast Microscopy (PCM)*. If fibers detected, the sample was analyzed using the TEM NIOSH Method 7402 as directed by the EPA OSC.
- Dust samples were analyzed for asbestos using the ASTM D 5755-09 – *Microvacuum sample method – TEM for Asbestos Structure Number Surface Loading.*

Perimeter soil samples were also analyzed by Eurofins EMLab P & K located in South San Francisco, California, using the following analyses:

- Perimeter soil samples were analyzed for asbestos by CARB Method 435, *Bulk Asbestos - PLM, 400-point count – modified for soil matrix.*

Waste samples from the pits around the Banbury Mixers were analyzed for the following chemical constituents by ALS Environmental, located in Houston, Texas:

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D

- Pesticides by SW-846 Method 8081B
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- TAL Metals/Mercury by SW-846 Methods 6020B/7471A

The wastewater samples collected from the pits around the Banbury Mixers were analyzed for the following constituents by GCAL, LLC located in Baton Rouge, Louisiana:

- TCLP TAL Metals/Mercury by SW-846 Methods 1311 and 6020B/7470A

Soil samples collected along the overland flow path were analyzed for the following constituents by Eurofins TestAmerica, located in Houston, Texas:

- VOCs by SW-846, Method 8260B
- SVOCs by SW-846, Method 8270D
- PCBs by SW-846 Method 8082A
- TPHs by Method TX1005
- TAL Metals/Mercury by SW-846, Methods 6020A/7471

A sample of backfill material to be used on-site was collected and analyzed for the following constituents by Eurofins TestAmerica, located in Houston, Texas:

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D
- Pesticides by SW-846 Method 8081B
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- TAL Metals/Mercury by SW-846 Methods 6020B/7471A
- TPHs by Method TX1005

Suspected chat samples collected were also analyzed by Eurofins TestAmerica located in Houston, Texas, for lead using Method 6020.

4.2 DATA VALIDATION

The asbestos laboratory data packages were reviewed to verify that data met the EPA technical requirements and quality assurance (QA) guidelines established for the respective analytical methods in the QASP. Soil and water analytical results verified that the data were acceptable for their intended use in meeting the objectives of the removal action.

This section summarizes the validation findings for 29 soil samples, three duplicate soil samples, one background soil sample, one backfill soil sample, two trip blanks, and two wastewater samples. The Data Validation Reports are provided as Appendix W.

In summary, the data validation indicates the following:

- One (1) field duplicate pair (G119-06-20191119-51 / G119-06-20191119-52) was collected for the soil matrix for VOCs, SVOCs, TPH, PCBs, and metals analyses. This field duplicate has analytical results that are within acceptable precision criteria for the analyses performed. No data was qualified due to field duplicate precision.
- Two (2) field duplicate pairs were collected for the soil matrix for metals and lead only, analyses - (G130-06-20191120-51 / G130-06-20191120-52 and G137-06-20191211-51 / G137-06-20191211-52, respectively). This field duplicate has analytical results that are within acceptable precision criteria for the analyses performed. No data was qualified due to field duplicate precision.
- A total of two trip blanks were submitted for VOC analysis. Both trip blanks had results reported as nondetect with the exception of carbon disulfide. The associated samples were reported as nondetect for this analyte and therefore did not require qualification.
- The following analytes were detected in a method blank: copper and mercury from the metals analysis; bis(2-ethylhexyl)phthalate from the SVOC analysis; and chloroform and carbondisulfide from the VOC analysis. The associated samples and analytes were qualified as nondetect (UB) at the LOQ due to method blank contamination. The other analyses had no method blank contamination and therefore did not require qualification.
- Results in one or more samples were qualified as estimated due to poor matrix spike (MS) and/or matrix spike duplicate (MSD) percent recoveries in the following analytes from the metals analysis: aluminum, barium, calcium, cobalt, iron, manganese, and vanadium. The other analyses had acceptable MS/MSD percent recovery results and did not require qualification.
- Results in one or more samples were qualified as estimated due to poor MS/MSD precision (relative percent difference) in the following analytes from the metals analysis: copper, iron, and lead. The other analyses had acceptable MS/MSD precision results and did not require qualification.

- Results in one or more samples were qualified as estimated due to poor serial dilution percent difference for aluminum, barium, copper, iron, lead, manganese, vanadium, and zinc in the metals analysis. The other metals analytes had acceptable serial dilution results and did not require qualification.
- All LCS/LCSD recoveries were within acceptable criteria for all associate analyses. No data required qualification.
- Surrogate recoveries were within the acceptance criteria for all applicable analyses with the exception of PCB analysis. One or more samples had PCB 1254 and/or PCB 1260 qualified as estimated due to surrogate recovery. The other analyses had acceptable surrogate percent recovery results and did not require qualification.
- Initial and continuing calibration checks were evaluated for all applicable analyses. Results for the following analytes were qualified as estimated due to elevated percent differences in the relative response factors (RRF): 3-nitroaniline, carbazole, bis(2-chloroisopropyl)ether, hexachlorocyclopentadiene, and hexachlorobenzene from the SVOC analysis and dichlorodifluoromethane, trans-1,3-dichloropropene, and tetrachloroethene from the VOC analysis. The other analyses had acceptable initial and continuing calibration checks and did not require qualification.
- Internal standards were evaluated for the applicable analyses. No results were qualified due to internal standards.
- Dual column confirmation was performed for the PCB analysis. PCB 1254 results in two samples were qualified as estimated due to the dual column confirmation results.

In summary, samples collected during the removal action were validated in accordance with method-specific criteria and *U.S. EPA CLP National Functional Guidelines*. All data are of acceptable overall quality for their intended use in meeting the objectives of the Removal Action.

A standard data management system included using bound field logbooks, Site photographs, sample management and tracking procedures, document control, and inventory procedures for both laboratory data and field measurements. SCRIBE software was used to create chain-of-custody forms and labels. SCRIBE was also used to manage and track sample information for samples submitted to laboratories. The SCRIBE file has been published to SCRIBE.net under Project Number 3644.

5 SUMMARY

Removal action activities were conducted at the Goodrich Asbestos Site from June 2019 through January 2020. Activities completed by the EPA included:

- A total of 25,362.49 tons of ACM was excavated, transported, and disposed of to an approved landfill:
 - A total of 7,188.46 tons of ACM were transported to the American Environmental Landfill (AEL) in Sand Springs, Oklahoma.
 - A total of 18,174.03 tons of ACM were transported to the Prairie View Landfill in Lamar, Missouri.
- A total of 629 perimeter air samples (including quality control [QC] samples) were collected during debris excavation and loading activities. Air sample results indicated no airborne asbestos fiber concentrations above the EPA action level of 0.01 fibers per cubic centimeter (f/cc).
- Particulate monitoring was conducted using DustTrak II DRX Particulate Monitors during soil excavation and loading activities; exceedances of the Site action level (100 μm) were attributed to off-site vehicular traffic due to the proximity of the monitoring stations to the public roads surrounding the Site.
- Soil was excavated to 6 inches below ground surface (bgs) in an area identified during the overland flow path sampling as containing trace (<0.25%) levels of asbestos. Post-excavation confirmation soil samples were analyzed and all associated results reported asbestos as non-detect.
- Approximately 53 cubic yards (cy^3) of exposed chat was excavated and disposed of at AEL in Sand Springs, Oklahoma. The chat was removed from the road, down to the concrete and the additional excavated areas were then backfilled with rock and secured with concrete walls.
- Additional hazardous materials removed included 53.82 tons of carbon black, four 55-gallon drums of miscellaneous hazardous waste, 2,388 fluorescent lightbulbs, and one roll-off box of hazardous corrosive waste (light ballasts), which were disposed of at various EPA approved disposal facilities depending on the components of the material.
- To confirm that the concrete foundation pad was clear of any residual asbestos at the end of the removal action, confirmation air sampling was conducted on 12 grids scattered over the concrete pad. The grids consisted of 100-foot-by-100-foot areas, randomly selected to verify the removal of ACM from the concrete pad foundation. No asbestos fibers were detected in samples collected from the 12 grids during the confirmation air sampling event.

- Approximately 660 cy³ of ACM was removed during the abatement of the Powerhouse Building, conducted by an Oklahoma Department of Labor (ODOL) licensed asbestos abatement contractor and disposed of at AEL, Sand Springs, Oklahoma. Post abatement clearance air samples were collected from the Powerhouse Building and indicated no asbestos detected above the Oklahoma Asbestos Control Act (40 O.S. § 450, 380:50-11-2 (d)) clearance level of 0.01 f/cc. Visual inspections conducted by ODOL, verified the completion of the abatement work as required by the Oklahoma Asbestos Control Act.
- A total of 249.32 tons of scrap metal separated from demolition debris was collected and recycled by Briscoe Scrap Recycling in Quapaw, Oklahoma.
- Site restoration activities included backfilling with rock three small, open depressions in the concrete foundations and open troughs and pits where applicable; securing the buildings on-site and the perimeter fencing to deter trespassing; and erecting fencing with warning signage around Utility Pit areas and other large open pits located around the Site.

6 REFERENCES

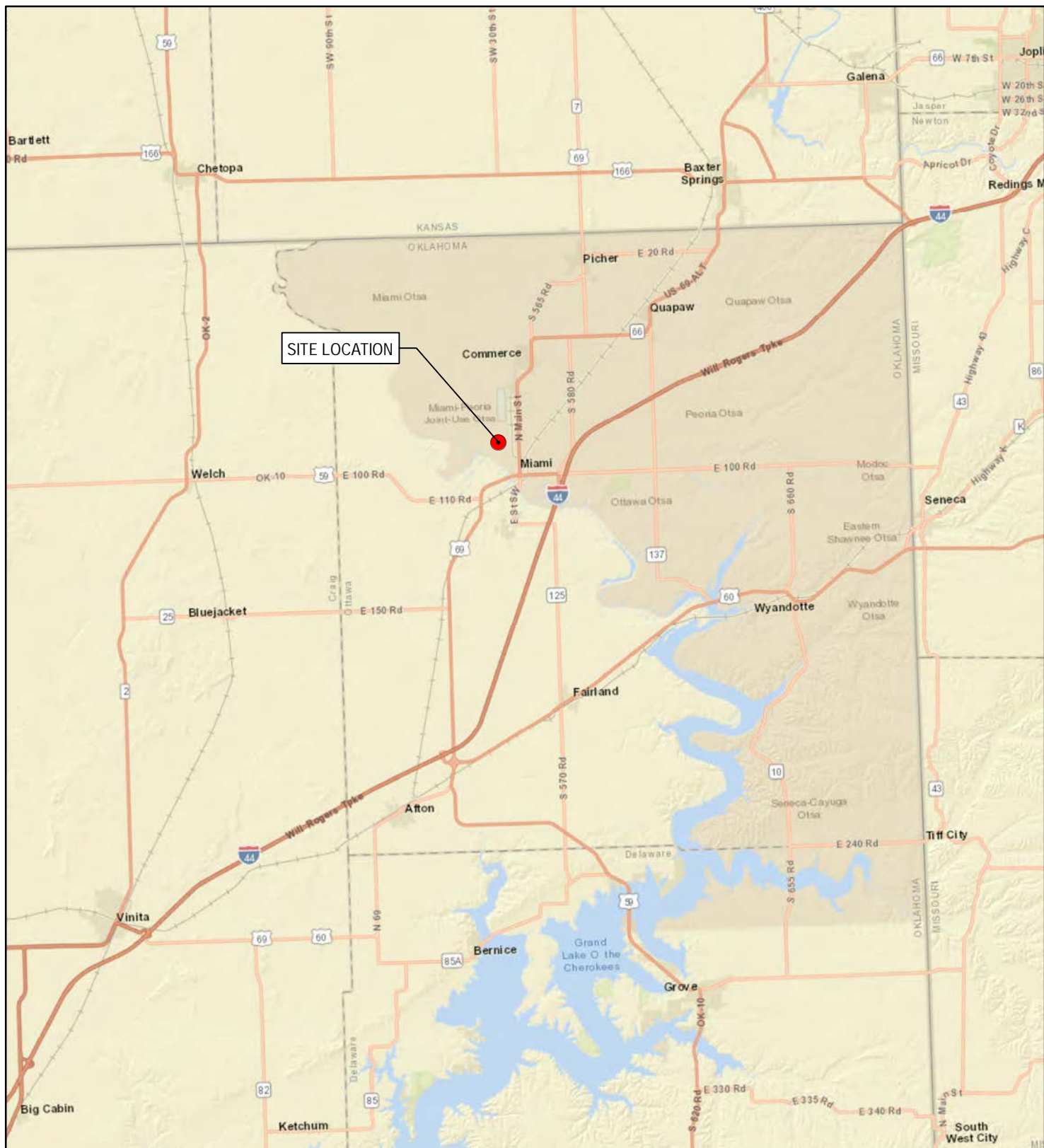
EPA (U.S. Environmental Protection Agency). 2008. Framework for Investigating Asbestos-Contaminated Superfund Site. Prepared by the Asbestos Committee of the Technical Review Workgroup of the Office of Solid Waste and Emergency Response. OSWER Directive #9200.0-68. September 2008.

EPA 2019. U.S. EPA Region 6 Goodrich Asbestos Removal Assessment Report. April 2019.

EPA. 2005. World Trade Center Residential Dust Cleanup Program. Final Report. December 2005. http://epa.gov/wtc/reports/residential_dust_cleanup_final_report.pdf

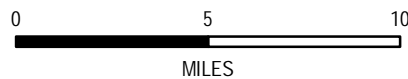
EPA, 2003a. Interim Final WTC (World Trade Center) Residential Confirmation Cleaning Study.

ODOL, (Oklahoma Department of Labor) 2016. Oklahoma Asbestos Control Act 40 O.S §450, et seq. Abatement of Friable Asbestos Rule OAC 380:50. January 2016.



LEGEND

● Site Location



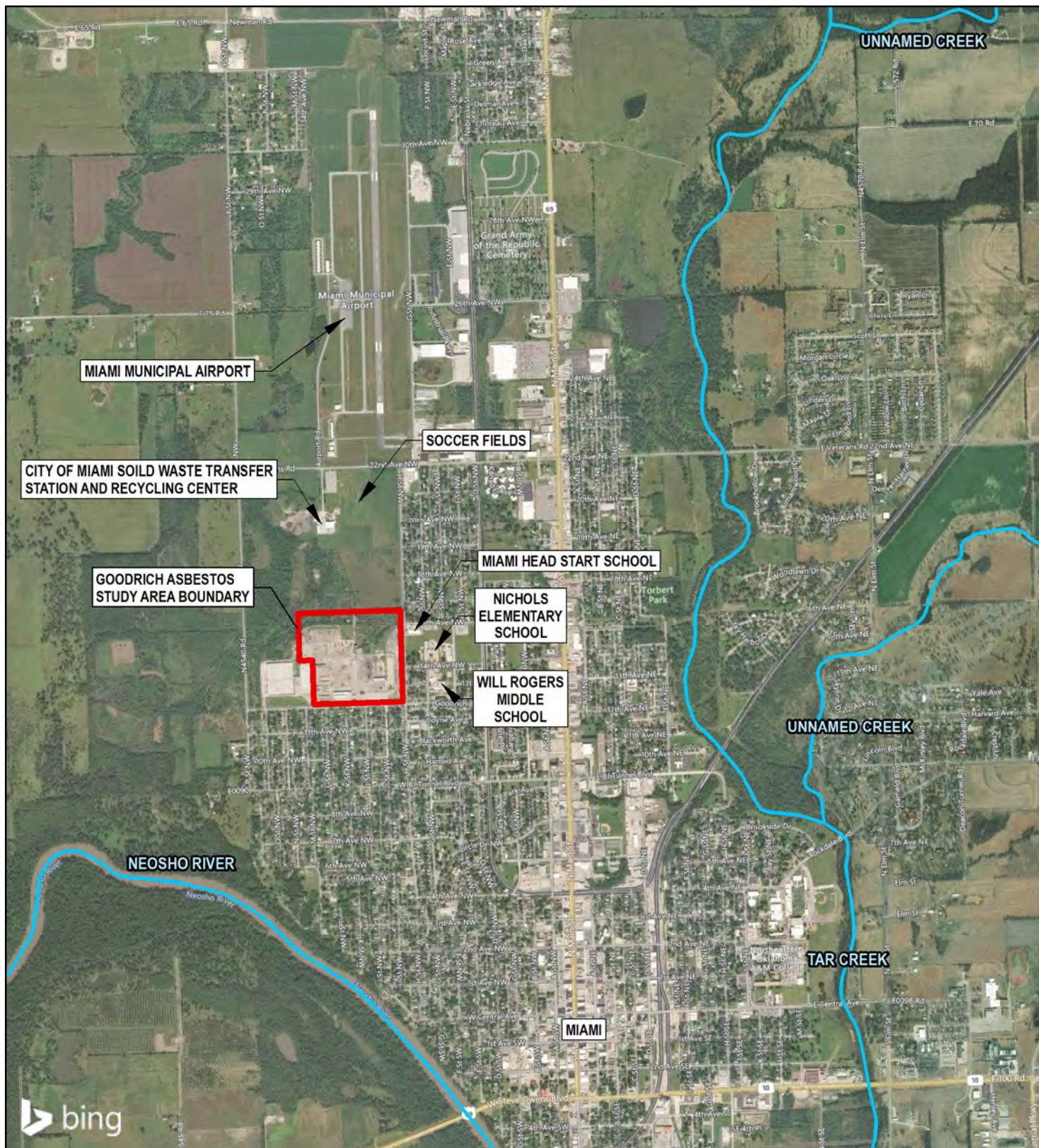
USEPA REGION 6

FIGURE 1-1 SITE LOCATION MAP GOODRICH ASBESTOS 1000 GOODRICH BLVD MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE	PROJECT NO	SCALE
MAY 2020	20600.012.001.1190	AS SHOWN

SOURCE: © WORLD STREET MAP; ESRI

TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK



LEGEND

- Study Area Boundary
- Waterways

SOURCE: © BING HYBRID; ESRI

TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK



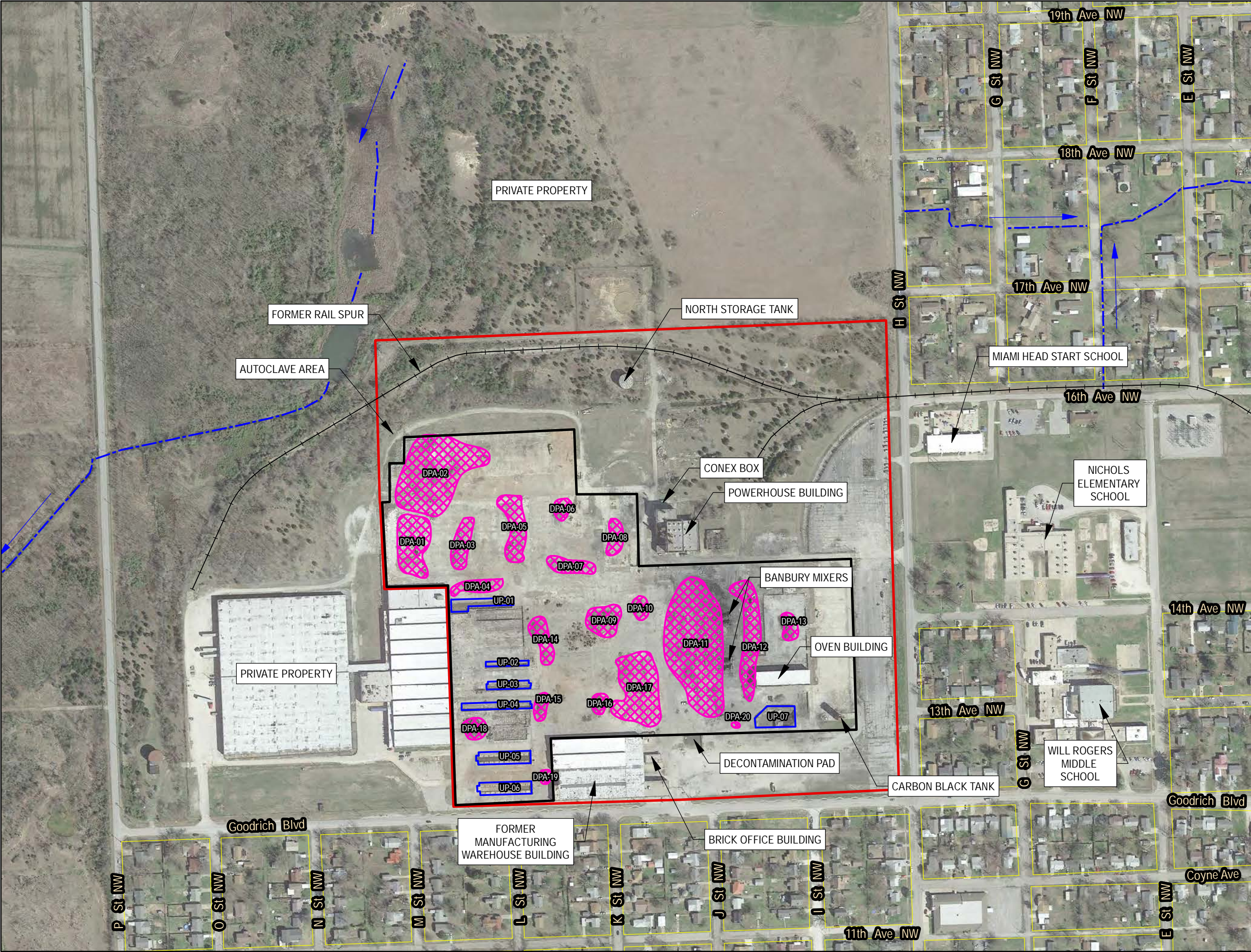
0 2,250 4,500
FEET



USEPA REGION 6

FIGURE 1-2
SITE AREA MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE	PROJECT NO	SCALE
MAY 2020	20600.012.001.1190	AS SHOWN



LEGEND

- Intermittent Surface Water Drainage
- Concrete Pad Boundary
- Study Area Boundary
- Surface Water Flow Direction
- Utility Pit Boundary
- Debris Pile Area
- Residential Areas

0 300 600
FEET

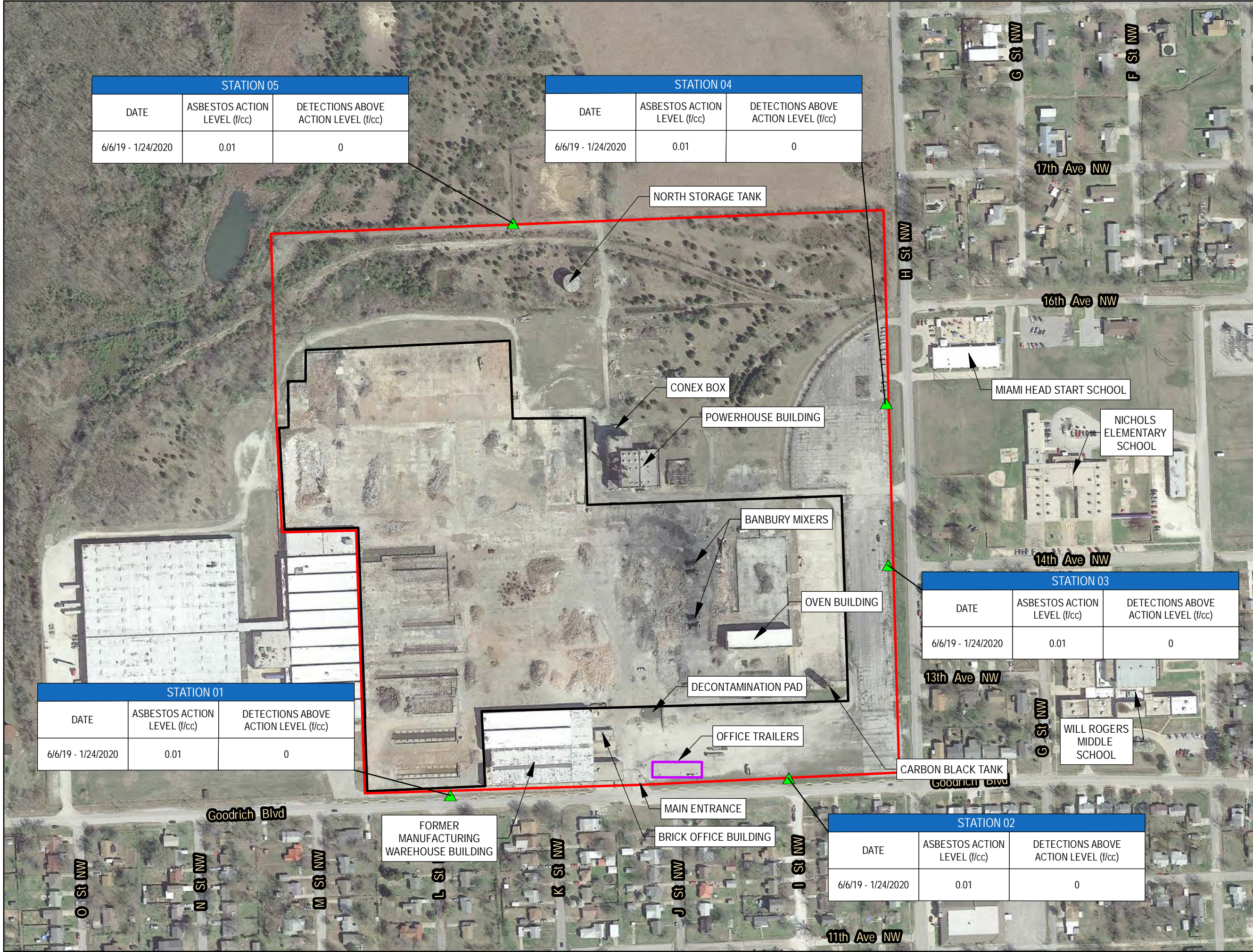
0001/19-190
SEMS: OKN000605314
SSID: A6MK

SOURCE: © GOOGLE EARTH, 2018

USEPA REGION 6

FIGURE 2-1
SITE LAYOUT MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE MAY 2020	PROJECT NO 20600.012.001.1190	SCALE AS SHOWN
------------------	----------------------------------	-------------------



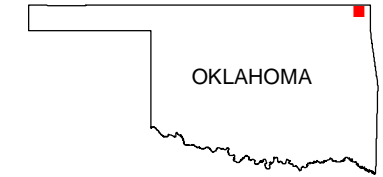
STATION 05		
DATE	ASBESTOS ACTION LEVEL (f/cc)	DETECTIONS ABOVE ACTION LEVEL (f/cc)
6/6/19 - 1/24/2020	0.01	0

STATION 04		
DATE	ASBESTOS ACTION LEVEL (f/cc)	DETECTIONS ABOVE ACTION LEVEL (f/cc)
6/6/19 - 1/24/2020	0.01	0

STATION 01		
DATE	ASBESTOS ACTION LEVEL (f/cc)	DETECTIONS ABOVE ACTION LEVEL (f/cc)
6/6/19 - 1/24/2020	0.01	0

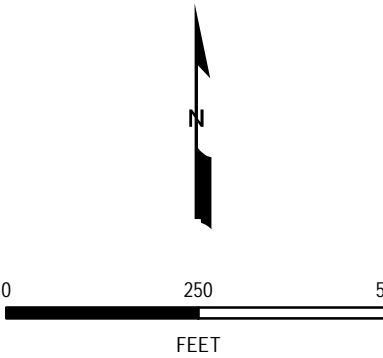
STATION 03		
DATE	ASBESTOS ACTION LEVEL (f/cc)	DETECTIONS ABOVE ACTION LEVEL (f/cc)
6/6/19 - 1/24/2020	0.01	0

STATION 02		
DATE	ASBESTOS ACTION LEVEL (f/cc)	DETECTIONS ABOVE ACTION LEVEL (f/cc)
6/6/19 - 1/24/2020	0.01	0



- LEGEND
- AIR SAMPLING/ MONITORING LOCATION
 - OFFICE TRAILERS
 - CONCRETE PAD BOUNDARY
 - STUDY AREA BOUNDARY
- UNITS: FIBERS / CUBIC CENTIMETER (f/cc)

NOTE:
1. Background asbestos air sample collected from Miami Fire Department, 6/5/2019. No Asbestos Detected (NAD).

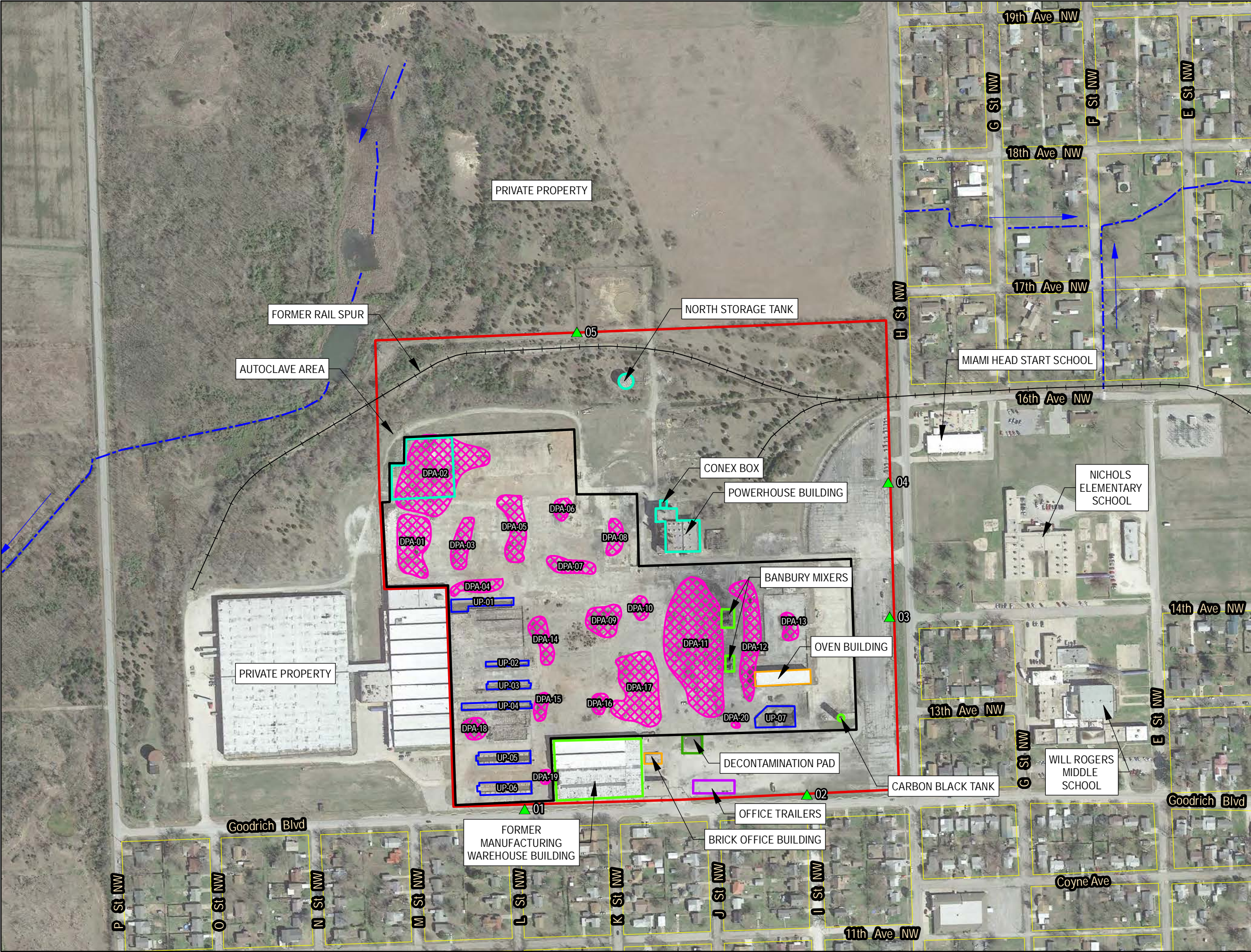


SOURCE: © GOOGLE EARTH, 2018
TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK



FIGURE 3-1
PERIMETER AIR SAMPLING AND MONITORING LOCATION AND RESULTS MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE	PROJECT NO	SCALE
MAY 2020	20600.012.001.1190	AS SHOWN



OKLAHOMA

LEGEND

- Air Sampling/Monitoring Location
- Intermittent Surface Water Drainage
- Surface Water Flow Direction
- Concrete Pad Boundary
- Study Area Boundary
- Utility Pit Boundary
- Removal of Hazardous Materials - Phase II
- Asbestos Abatement/Removal - Phase II
- Debris Pile Removal - Phase I
- Demolished Buildings - Phase I
- Residential Areas

0 300 600
FEET

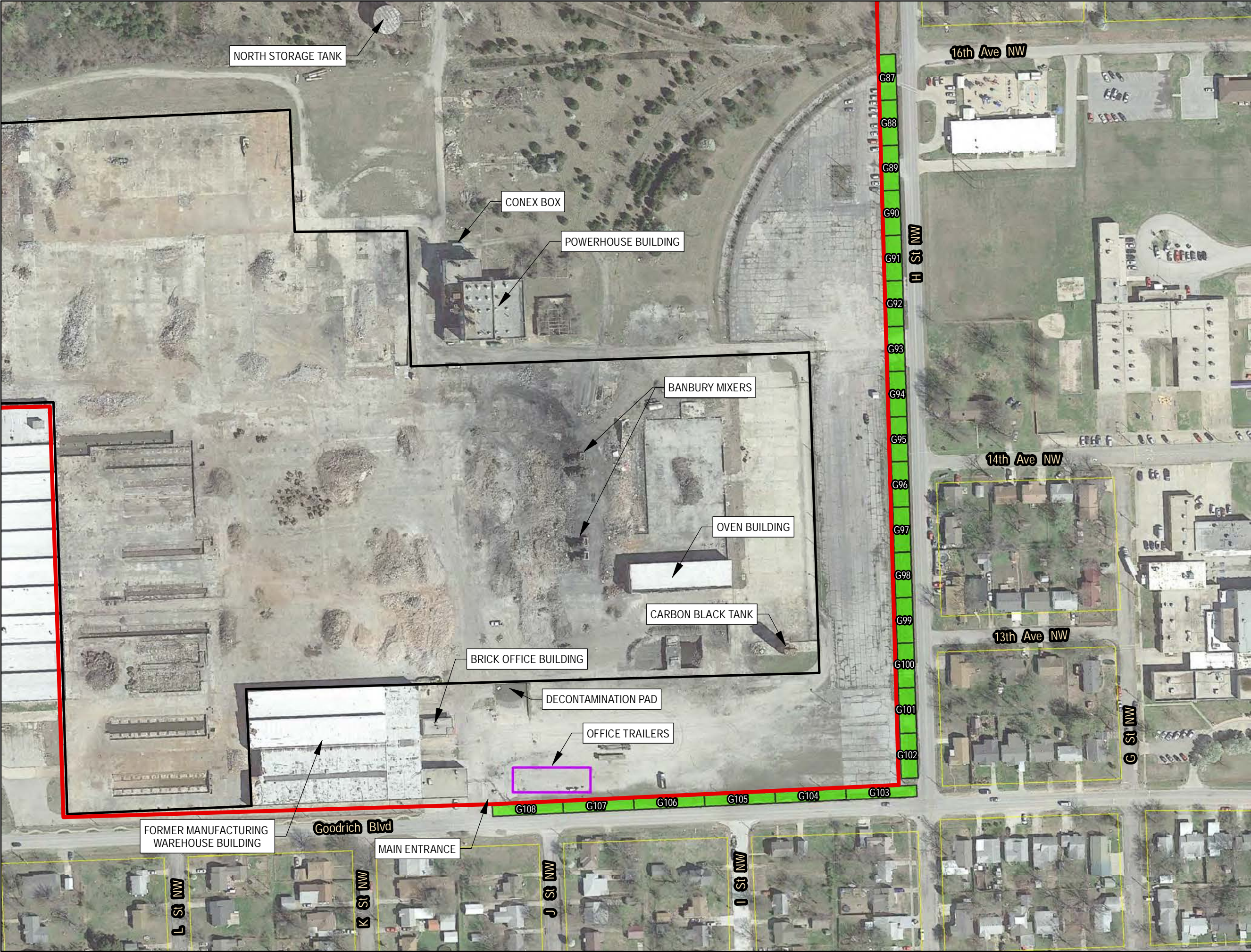
SOURCE: © GOOGLE EARTH, 2018

TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK

USEPA REGION 6

FIGURE 3-2
SITE REMOVAL MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE MAY 2020	PROJECT NO 20600.012.001.1190	SCALE AS SHOWN
------------------	----------------------------------	-------------------



OKLAHOMA

LEGEND

- Concrete Pad Boundary
- Study Area Boundary
- Residential Areas
- No Asbestos Detected

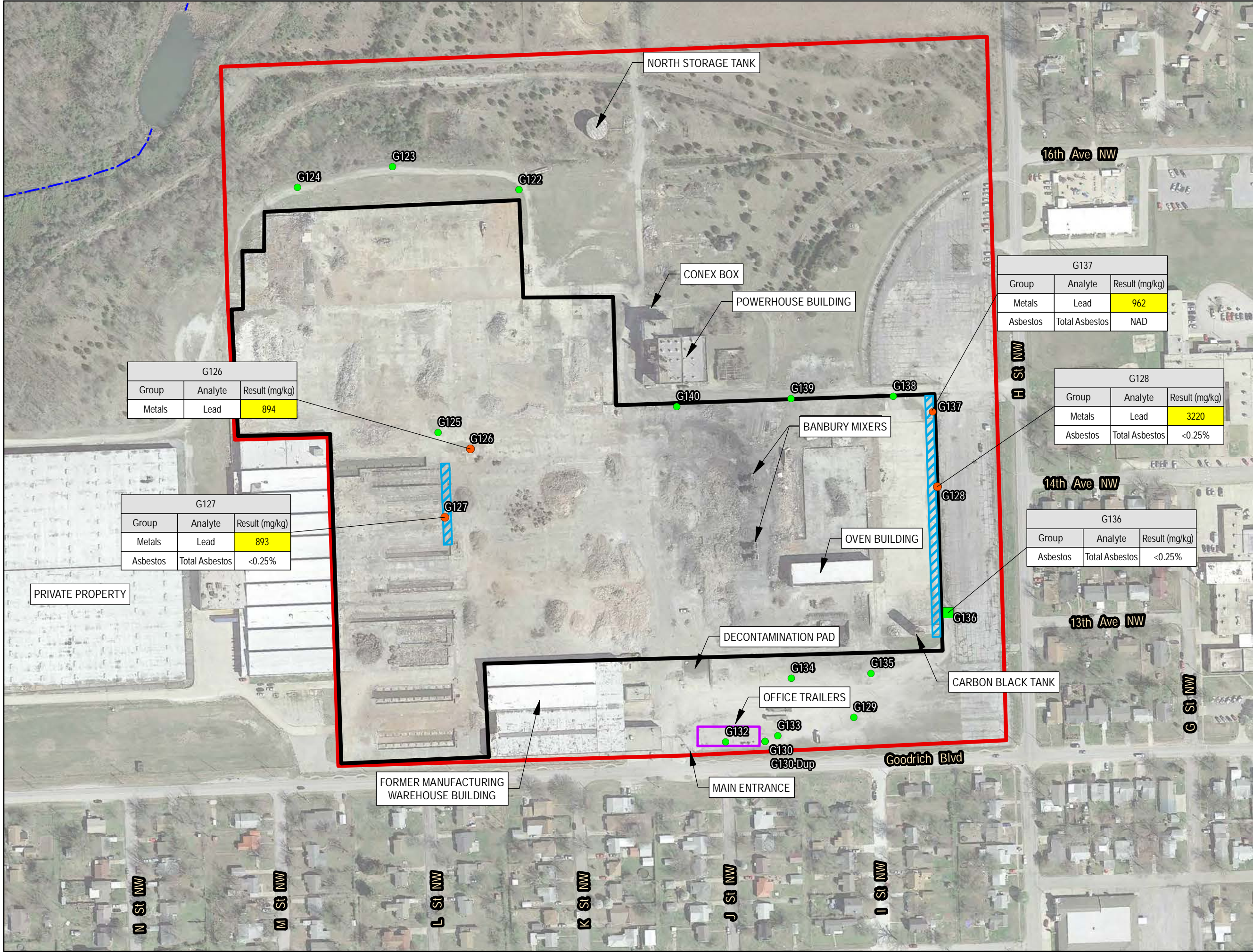
0 160 320
FEET

SOURCE: © GOOGLE EARTH, 2018
TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK

USEPA REGION 6

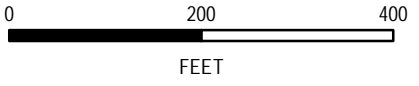
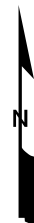
FIGURE 3-3
PERIMETER SOIL
SAMPLING RESULTS MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE MAY 2020	PROJECT NO 20600.012.001.1190	SCALE AS SHOWN
------------------	----------------------------------	-------------------



- LEGEND
- Result Above EPA
 - Residential RSL of 400 mg/kg
 - Result Below EPA
 - Residential RSL of 400 mg/kg
 - Asbestos detected at < 0.25%
 - Intermittent Surface Water Drainage
 - Concrete Pad Boundary
 - Study Area Boundary
 - Chat Removal Area - Phase II

- NOTES:
1. mg/kg - milligrams per kilogram
 2. Lead result for G137 is from a Field Duplicate sample
 3. Yellow highlighted values represent results above Summary RSL 11/2018 THQ=1
 4. At location G126 the chat was sealed under backfill rock and therefore not removed.



SOURCE: © GOOGLE EARTH, 2018
TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK

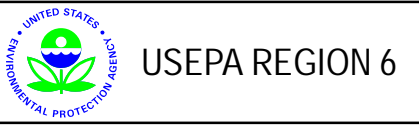


FIGURE 3-4
CHAT SAMPLE LOCATION
AND RESULTS MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE	PROJECT NO	SCALE
MAY 2020	20600.012.001.1190	AS SHOWN

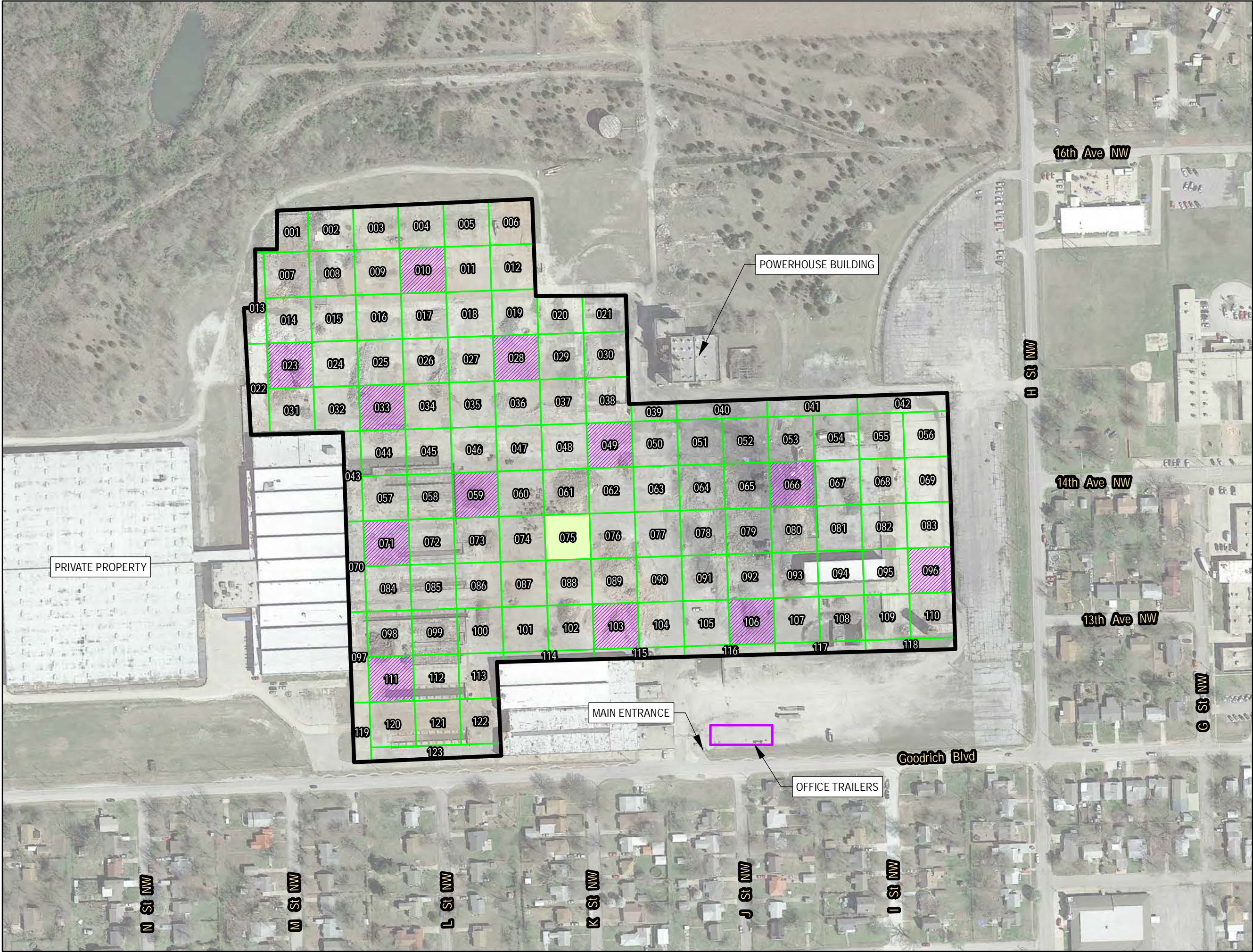
G137		
Group	Analyte	Result (mg/kg)
Metals	Lead	962
Asbestos	Total Asbestos	NAD


G128		
Group	Analyte	Result (mg/kg)
Metals	Lead	3220
Asbestos	Total Asbestos	<0.25%

G136		
Group	Analyte	Result (mg/kg)
Asbestos	Total Asbestos	<0.25%

G126		
Group	Analyte	Result (mg/kg)
Metals	Lead	894

G127		
Group	Analyte	Result (mg/kg)
Metals	Lead	893
Asbestos	Total Asbestos	<0.25%





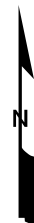
OKLAHOMA

LEGEND

- Concrete Pad Boundary
- Concrete Sample Grid (n = 123)
- Test Grid
- Grids Sampled, No Asbestos Detected - Phase II

NOTES:


- Grid 075 excluded from random selection due to prior test grid on December 11th, 2019.
- 10% of randomly selected grids were sampled (n=12).



0 200 400
FEET

SOURCE: © GOOGLE EARTH, 2018

TDD: 0001/19-190
SEMS: OKN000605314
SSID: A6MK



USEPA REGION 6

FIGURE 3-5
CONCRETE PAD CLEARANCE SAMPLE
LOCATION AND RESULTS MAP
GOODRICH ASBESTOS
1000 GOODRICH BLVD
MIAMI, OTTAWA COUNTY, OKLAHOMA

DATE MAY 2020	PROJECT NO 20600.012.001.1190	SCALE AS SHOWN
------------------	----------------------------------	-------------------

